TT-V8EC
RMT-402

SERVICE MANUAL

AEP Model

March, 1985

SPACIFICATIONS

Tuner section

Television system	CCIR system B, G and H, PAL colour
Sound system	Monaural
Channel coverage	VHF E2–U10 UHF E21–68
Programming system	30 programme memories Automatic programming digital tuning
Aerial input	75-ohm, asymmetrical aerial socket
RF output signal	UHF channels E30/B30 to E39/B39 (variable), 75 ohms, unbalanced

Inputs and outputs

Video input	EURO CONNECTOR: 21-pin (pin 20) 1V (p-p), 75 ohms, unbalanced, sync negative
Video outputs	EURO CONNECTOR: 21-pin (pin 19) VIDEO OUT: phono jack 1V (p-p), 75 ohms, unbalanced, sync negative
Audio input	EURO CONNECTOR: 21-pin (pin 6) 47 kilohms, −6 dBs (0 dBs = 0.775 V rms)
Audio outputs	EURO CONNECTOR: 21-pin (pins 1 and 3) AUDIO OUT: phono jack Load impedance less than 1 kilohms −6 dBs with 10 kilohms load, unbalanced
Video camera recorder	connection DC OUT cable equipped with a 24-pin connector

Power output of the 24-pin DC OUT connector

Mode	⊕	⊖
VTR	No. 2 8V, 800mA	No. 1
BATTERY	No. 3 7.5V, 1.5A	

Timer

Clock	Crystal lock
Timer indication	24-hour cycle
Timer setting	Only for recording 4 events/3 weeks max, adjustable for any day or for all 7 days of the week

— Continued on next page —

MICROFILM

TUNER TIMER UNIT

SONY®

Consumer VIDEO

General

Power requirements	220 V ac ±10%, 50 Hz
Power consumption	50 W
Storage temperature	−20°C to +65°C (−4°F to + 149°F)
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions	Approx. 355 × 52 × 337 mm (w/h/d) (14 × 2⅛ × 13⅜ inches) including projecting parts and controls
Weight	Approx. 4.5 kg (9 lbs 15 oz) net

Accessories supplied

75-ohm coaxial cable for TV connection (1)
Remote Commander RMT-402 with two IEC designation R6 batteries (1)
RF channel adjustment tool (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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SECTION 1
GENERAL

1-1. PRECAUTIONS

Safety

- Before operating, check that the operating power voltage of the unit is identical with that of your local power supply.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for several days or more. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- The unit is not disconnected from the ac power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

Installation

- To prevent internal heat build-up, do not block the ventilation openings.
- Do not install the unit in a hot or humid place or in a place subject to excessive dust or mechanical vibration.
- Do not install the unit near an AM receiver, since noise may be heard when listening to the AM programme.
- Do not place any heavy object on the unit.

Cleaning

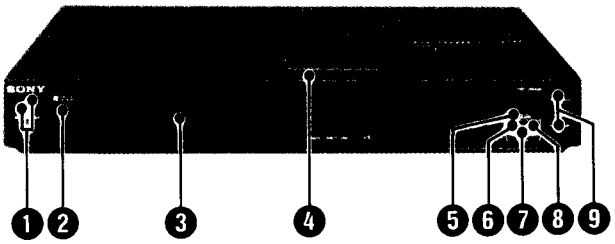
Clean the unit with a slightly damp soft cloth. Use a mild houlsehold detergent. Never use strong solvents such as thinner or benzine as they might damage the finish of the cabinet.

Repacking

Retain the original carton and packing materials for safe transport of this unit in the future.

1-2. LOCATION AND FUNCTION OF CONTROLS

A-1



For details on the use of each control, refer to the pages indicated in the brackets.

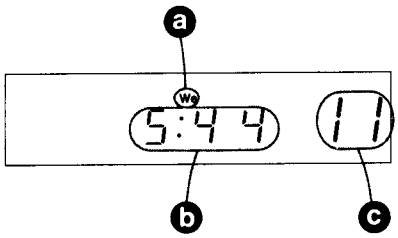
Front panel A-1

❶ ON/STANDBY switch and lamp [P. 13]
Press to turn on the unit. The lamp will light up. Press again to turn it off.
The timer section will continue to operate and the time will be displayed even if this switch is off as long as the ac power cord is connected to the ac outlet.
When the DC OUT cable is connected to the CCD-V8E video camera recorder, the VTR POWER and CAMERA POWER switches on the recorder do not function. The ON/STANDBY switch turns the VTR POWER (with the input selector set to TUNER/LINE) or VTR POWER and CAMERA POWER (with the input selector set to CAMERA) on or off simultaneously.

❷ REMOTE SENSOR
Detects the remote control signal transmitted from the supplied Remote Commander.

❸ Display window

A-2

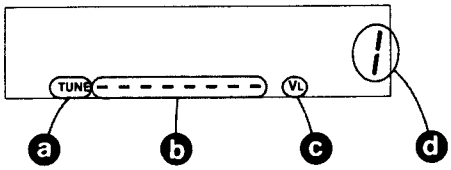


Clock setting/display mode A-2 [P. 9]

When the ON/STANDBY switch is ON and the input selector is set to TUNER.

- **ⓐ Day of the week**
- **ⓑ Time**
- **ⓒ Programme number**

A-3



Programme presetting mode A-3 [P. 11]

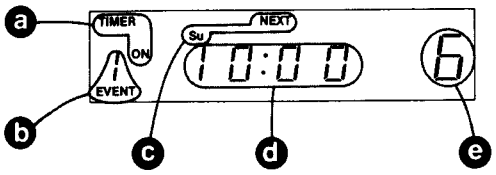
When the SEARCH ON/OFF button is set to ON.

- **ⓐ TUNE**
- **ⓑ Segments** show the approximate location of the channel in the band.
- **ⓒ Band indicator** shows the band in which the channel is being tuned.

VL: Channels E1–4 and S1–3 VH: Channels M1–10, E5–12 and U1–10 U: Channels E21–68

- **ⓓ Programme number**

A-4

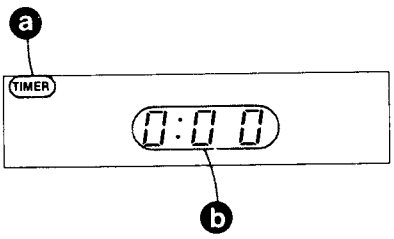


ON/OFF timer setting/checking mode A-4 [P. 19]

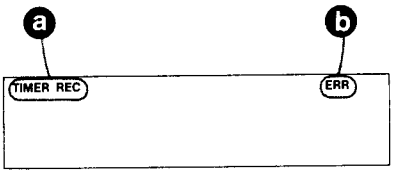
When the TIMER SET or CHECK button is pressed and the timer is being set or checked.

- **ⓐ TIMER ON or OFF**
- **ⓑ Event number** From 1 through 4
- **ⓒ Day of the week**
  From Su (Sunday) through Sa (Saturday) within this week, next week, or the week after next and every day
- **ⓓ Time**
- **ⓔ Programme number**

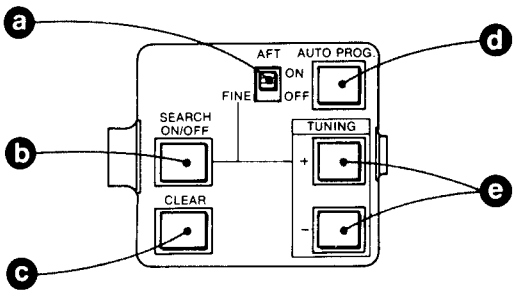
A-5



A-6



A-7



Quick timer setting/recording mode A-5 [P. 21]

When the QUICK TIMER button is pressed.

ⓐ **TIMER or TIMER REC**

ⓑ **Recording duration**
From 0 through 2 hours in 30 minutes intervals or until the end of the tape.

A-6 [P. 20]

ⓐ **TIMER REC** lights when the TIMER REC ON/OFF button is pressed and remains lit until the timer recording is finished.

ⓑ **ERR (error)** blinks if the TIMER REC ON/OFF or QUICK TIMER button is pressed when a cassette is not installed on the recorder, the red tab on the cassette is exposed, or the tape is at its end.

❹ **Tuning compartment** A-7 [P. 10]

ⓐ **AFT switch**
Normally set to ON. The automatic fine tuning circuit locks in and maintains a sharp picture.

ⓑ **SEARCH ON/OFF button**
Press as the first step in presetting programmes. After presetting, press again.

ⓒ **CLEAR button**
Press to clear the preset station.

ⓓ **AUTO PROG. (programming) button**
Press to preset all receivable stations automatically.

ⓔ **TUNING buttons**
When the SEARCH ON/OFF button is set to ON, press to tune in a station to be preset manually. Press the – button to get a station of lower frequency and the + button to get a station of higher frequency. When the SEARCH ON/OFF button and the AFT switch are set to OFF, press to fine tune the station.

❺ **READY lamp**
Lights when the CHARGE button is pressed with the ON/STANDBY switch set to ON to indicate that the unit is ready for charging.

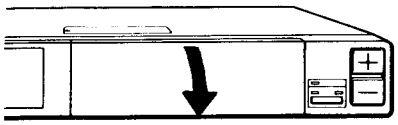
❻ **VTR lamp**
Lights when the battery pack in the recorder is being charged.

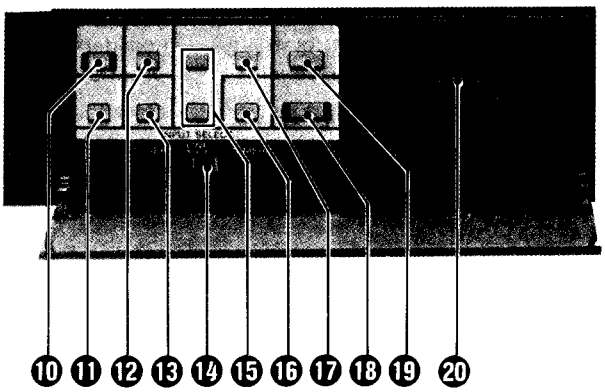
❼ **CHARGE button** [P. 17]
Press to charge the battery pack in the recorder if connected, or the battery pack in the BATTERY compartment of this unit.

❽ **INT. (internal) lamp**
Lights when the battery pack in the BATTERY compartment of this unit is being charged.

❾ **PROGRAM buttons**
Press to select the number of the programme to be viewed or recorded. Press the + button for higher-numbered programmes, and the – button for lower-numbered programmes.

A-8





Behind the front panel A-8

⑩ CLOCK SET button [P. 9]
Press as the first step in setting the current time.

⑪ BRIGHT/DIMMER button
Press to darken the indications on the display window. Press again to set to normal brightness.

⑫ TIMER SET button [P. 19]
Press as the first step in setting or resetting timer recording.

⑬ CHECK button [P. 20]
Press to check the timer presettings.

⑭ Input selector
Select the signal source to be viewed or recorded.
TUNER: For TV programmes from the AERIAL IN socket
LINE: For audio and video signals from the EURO CONNECTOR
CAMERA: For audio and video signals from the camera section of the CCD-V8E.

⑮ +/– buttons
Press the + button to advance the day of the week, hours, minutes and programme numbers. Press the – button to go back.

⑯ CLEAR button [P. 20]
In the timer setting or checking mode, press to clear the memory of timer recording of a particular event.

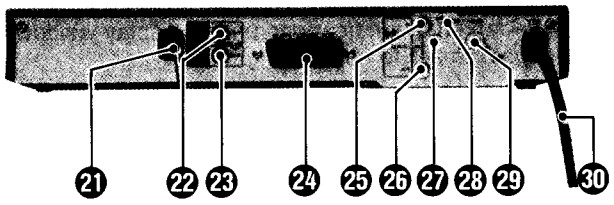
⑰ NEXT button
Press to advance to the next item to be set in the clock setting or timer setting mode.

⑱ QUICK TIMER button [P. 21]
Functions in the stop or non-timer recording mode. Press twice or more to start a quick timer recording or to extend the recording time. The recording duration can be set in 30 minute intervals up to 2 hours, or to the end of the tape.

⑲ TIMER REC ON/OFF button [P. 20]
Press to activate the timer recording. To deactivate the timer recording, press again.

⑳ BATTERY compartment [P. 17]
Insert a battery pack to be charged here.

A-9



Rear A-9

㉑ AC power cord
Connect to an ac outlet.

㉒ VIDEO OUT jack (phono type)
Connect to the video input of a video cassette recorder or a TV/monitor.

㉓ AUDIO OUT jack (phono type)
Connect to the audio input of a video cassette recorder, a TV/monitor, or an audio amplifier.

㉔ EURO CONNECTOR (21-pin)
Connect to the 21-pin connector of a video cassette recorder or a TV/monitor, or to the audio/video input and/or output of these units with an appropriate connecting cable.

㉕ AERIAL IN socket
Connect an aerial cable here.

㉖ AERIAL OUT socket
Connect to the aerial input of a TV with the supplied aerial cable.

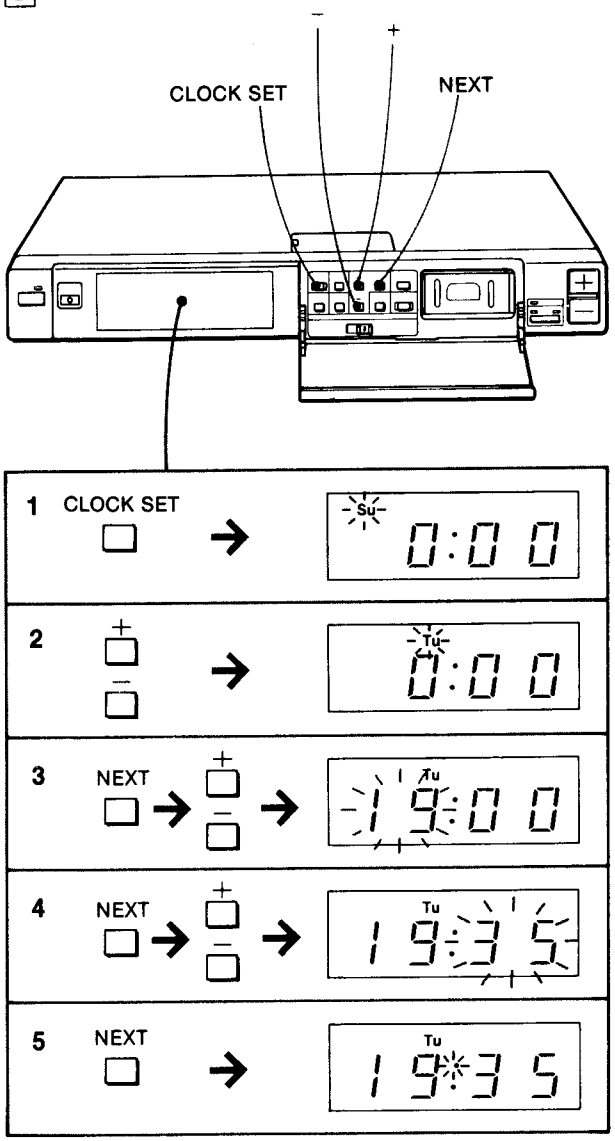
㉗ DX/LOCAL switch [P. 11]
Normally set to DX. If the TV signal is very strong, set to LOCAL.

㉘ TEST SIGNAL switch [P. 10]
Set to ON to obtain a test pattern for adjusting the TV.

㉙ RF CHANNEL screw [P. 10]
If there is interference on the factory-preset channel for RF output and the output signal from this unit cannot be displayed clearly on the TV screen, adjust the screw with the supplied screwdriver.

㉚ DC OUT cable (with 24-pin connector)
Connect to the MULTI CONNECTOR on a CCD-V8E video camera recorder. DC power is fed through this cable to the recorder.

B



1-3. SETTING THE CLOCK

When you connect the ac power cord to a wall outlet, the clock in the display window indicates "Su 0:00" to show that it is ready to be set.

Time indication
0:00 = midnight 12:00 = noon

Day indication
Su = Sunday Mo = Monday Tu = Tuesday
We = Wednesday Th = Thursday Fr = Friday
Sa = Saturday

Example: To set for Tuesday night at 7:35 (19:35) B

1 Press the CLOCK SET button.
2 Set the day by pressing the + or − button.
3 Press the NEXT button and set the hour by pressing the + or − button.
4 Press the NEXT button and set the minute by pressing the + or − button.
5 With an announced time signal, press the NEXT button.
The clock now starts operating, showing the correct time. The dots of the colon alternately blink every 30 seconds.

NEXT button
Each time the NEXT button is pressed, the item to be set blinks to let you know the setting order.

+/− buttons
The + and − buttons can be pressed in two ways.

When you hold a button down, the digits will advance continuously until the button is released.

When you press and immediately release a button, the digits will advance by one.

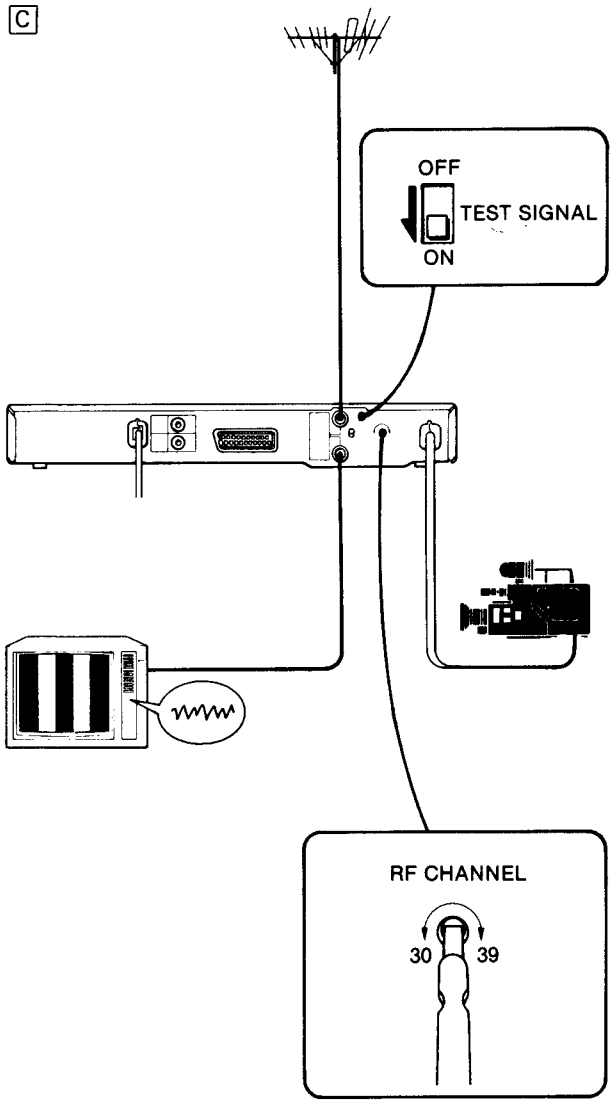
To change the actual clock setting
Press the CLOCK SET button and repeat the clock setting procedure from step 1.

Note
If you have pressed the CLOCK SET button inadvertently, press the NEXT button enough times until the dots of the colon blink.

When power has been interrupted, the time indication reverts to "Su 0:00", showing that the clock must be reset.

1-4. ADJUSTING THE TV [C]

[C]



One of the television programme positions must be adjusted to receive the signal from the TT-V8EC.
Note that the adjustment is not necessary, however, when the TT-V8EC is connected to the video/audio inputs on the TV/monitor.

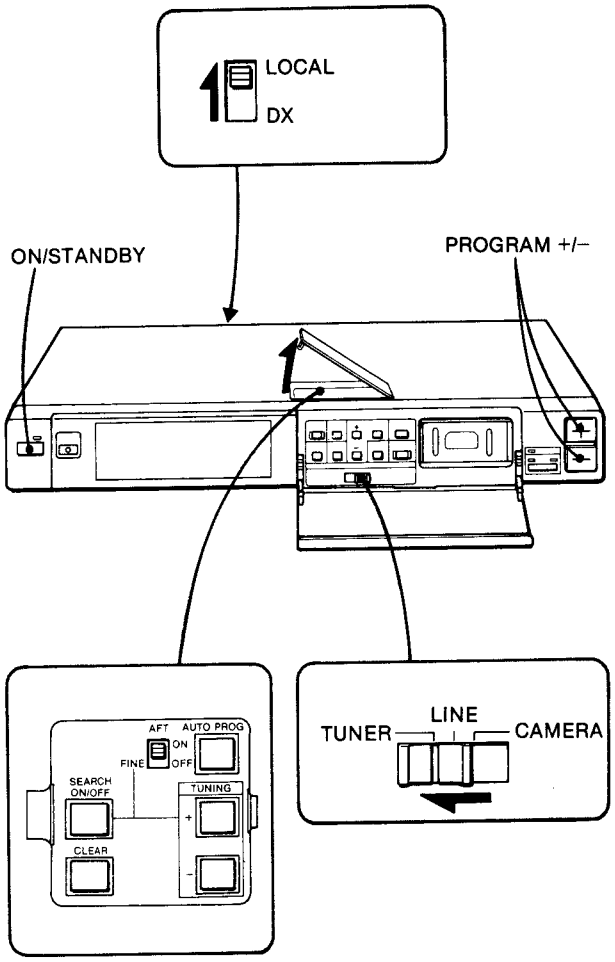
1 After making power connections, press the ON/STANDBY switch.
2 Set the TEST SIGNAL switch on the rear to ON. The test signal is transmitted on a channel between UHF channels 30 and 39.
3 Turn on the TV and select a programme position which is not being used to receive a TV station. Tune the channel until you see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the test signal.

If the test picture is free of disturbance, the TV adjustment is complete. Set the TEST SIGNAL switch to OFF.

If the test picture is not free of disturbance
1 Set the TEST SIGNAL switch to ON again.
2 Slightly turn the RF CHANNEL screw on the rear with the supplied screwdriver.
3 Adjust the channel of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV until you see an undistorted test pattern on the TV screen. Repeat steps **2** and **3**, if necessary.
4 Now the TV adjustment is complete. Reset the TEST SIGNAL switch to OFF.

1-5. PROGRAMMING TV STATIONS [D]

[D]



Automatic and manual programming are available. Automatic programming automatically presets up to 30 receivable stations from the lowest frequency to the highest. Manual programming is useful for presetting selected stations in any desired sequence.
To preset a weak station, manual programming is recommended.

To start programming, turn on the TT-V8EC by pressing ON/STANDBY switch and set the input selector to TUNER.

Automatic programming

1 Set the SEARCH ON/OFF button to ON.
The display window changes to the tuning indicator. [A-3]
2 Press the AUTO PROG. button. Up to 30 receivable stations will be preset one by one from programme position 1. When no more stations can be located, programme number "1" will light on the display window and automatic programming will stop.

Manual programming

1 Set the SEARCH ON/OFF button to ON.
The display window changes to the tuning indicator. [A-3]
2 Press the + or – PROGRAM button to select the programme position.
+ for a higher-numbered programme position
– for a lower-numbered programme position
3 Press the + TUNING button to locate a station with higher frequency and the – TUNING button to locate a station with lower frequency. The tuning indicator shows the approximate location of the current channel. When a station has been received, the search will stop. Press the + or – button again, until the desired station is received.
4 Repeat steps **2** and **3** for all the desired stations.
5 Set the SEARCH ON/OFF button to OFF so that the tuning indicator disappears.

To cancel an unused programme

1 Select the programme to be cancelled with the + or – PROGRAM button.
2 Set the SEARCH ON/OFF button to ON.
3 Press the CLEAR button.
4 Set the SEARCH ON/OFF button to OFF.

Then the cancelled programme will be skipped when the + or – PROGRAM button, or the + or – side of the PROGRAM button on the Remote Commander is pressed. When the corresponding programme number button on the Commander is pressed, the sound of the cancelled programme will be cut out.

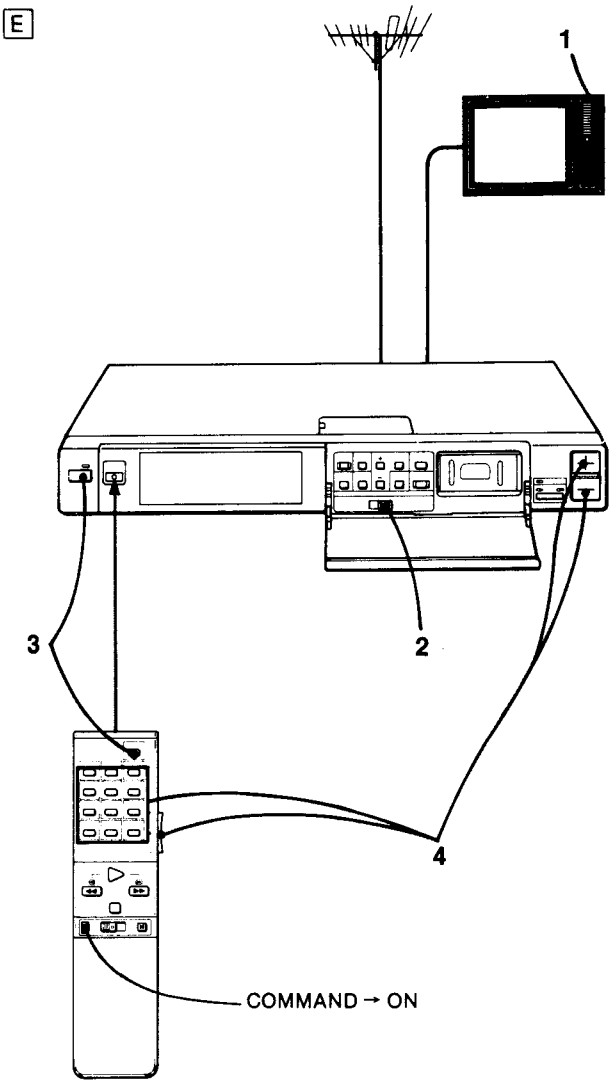
To fine tune a station

If the picture of a particular station is not acceptable, check that the SEARCH ON/OFF button is set to OFF, set the AFT switch to OFF and keep the + or – TUNING button pressed until the picture becomes clear. To view this particular station, set the AFT switch to OFF.

Notice for customers in a strong signal area

This unit has a booster to assure stable TV reception. However, in areas near TV stations, where the TV signal is very strong, the picture may be affected by the booster. If this happens, set the DX/LOCAL switch on the rear panel to LOCAL.

E



1-6. VIEWING TV PROGRAMMES

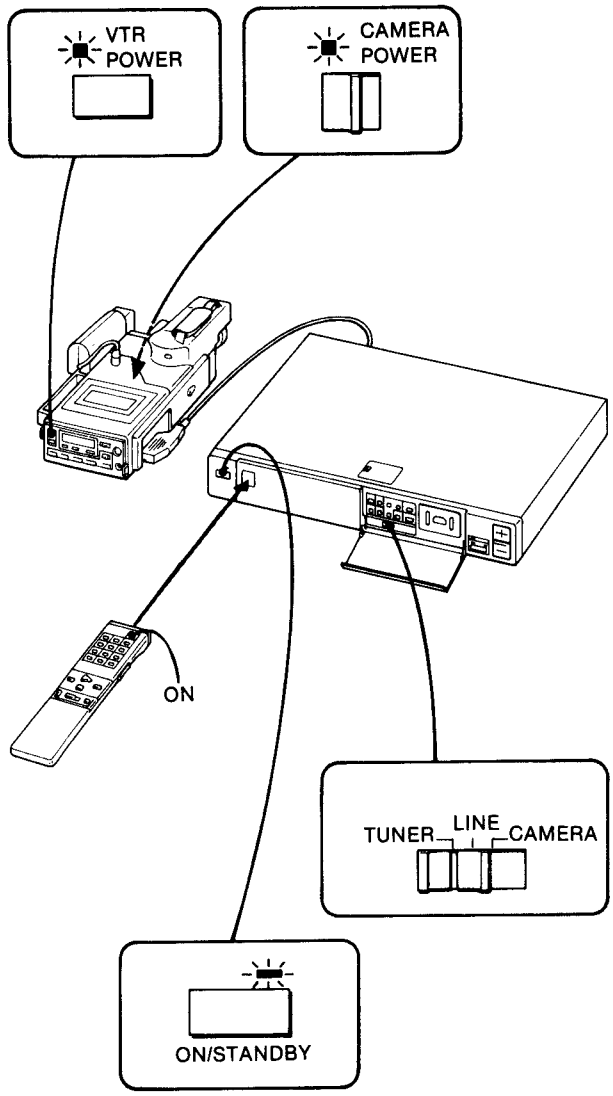
To select a programme on the TV
Turn the TV on and select the programme by pressing the programme select button on the TV.

To select a programme on the TT-V8EC or on the Remote Commander E

1 Turn on the TV/monitor.
If your TV does not have video/audio inputs, select the programme position adjusted for receiving signals from the TT-V8EC.
If your TV/monitor is connected to the VIDEO/AUDIO OUT jacks or to the EURO CONNECTOR on the TT-V8EC, select the correct input to receive video/audio signals.
2 Set the input selector on the TT-V8EC to TUNER.
3 Turn the TT-V8EC on by pressing the ON/STAND-BY switch.
4 Select the desired programme by pressing the + or – PROGRAM button, the + or – side of the PROGRAM button on the Commander, or the programme number buttons(s) on the Commander. Selected programme number will appear in the display window.

How to press the programme number buttons
For programmes 0 through 9, press the corresponding single-digit button.
For 10 through 19, press "1–" for the tens-digit and then the corresponding single-digit button.
For 20 through 29, press "2–" and then the corresponding single-digit button.
● If you do not press a single-digit button within several seconds after pressing "1–" or "2–", the previous programme position will be recalled.

F



1-7. TURNING THE TT-V8EC AND THE CCD-V8E ON AND OFF F

When the DC OUT cable is connected to the MULTI CONNECTOR on the CCD-V8E, the TT-V8EC supplies dc power and control signals to operate the CCD-V8E with the Remote Commander.

You will find two power switches and lamps on the CCD-V8E: VTR POWER on the front and CAMERA POWER on the bottom.

These power switches do not function when the DC OUT cable is connected. You can synchronize power on/off of the CCD-V8E with that of the TT-V8EC by pressing the ON/STANDBY switch on the panel of the TT-V8EC or ON switch on the Commander.

Select the section to be turned on by setting the input selector to the position indicated in the following table.

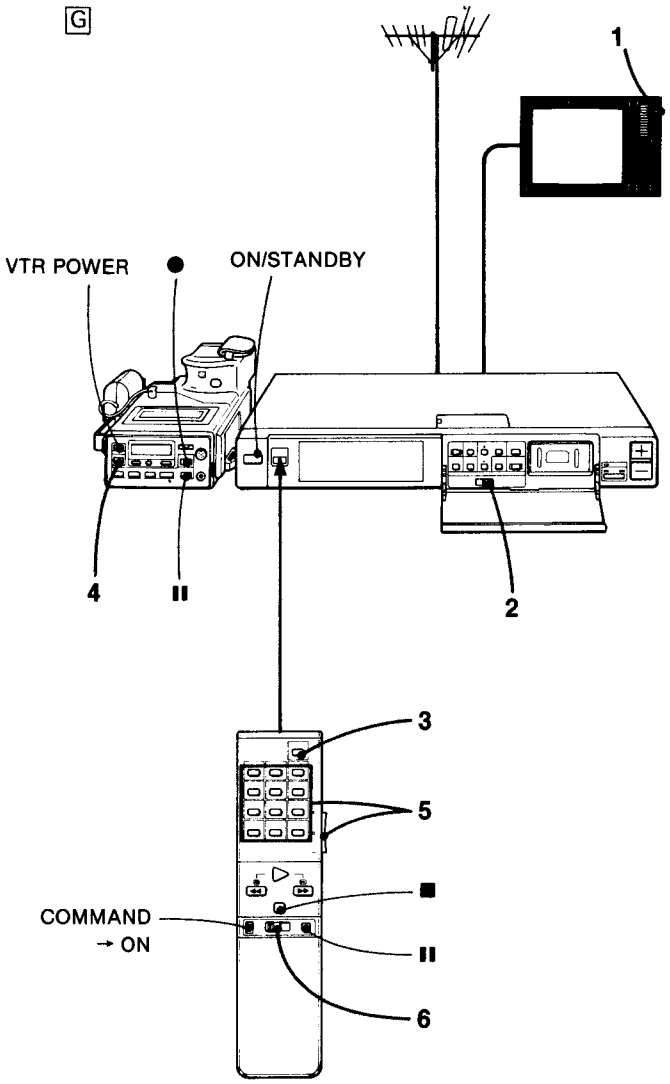
CCD-V8E's operating mode	CCD-V8E section turned on	TT-V8EC input selector's setting
VTR mode For recording TV programmes, playing back a recorded tape*, or editing	**Recorder section** The VTR POWER lamp will light.	**TV** For recording TV programmes **LINE** For editing
VTR-CAMERA mode For camera recording and monitoring	**Recorder and camera sections** the VTR POWER and CAMERA POWER lamps will light.	**CAMERA** For camera recording and monitoring

*During playback, the CCD-V8E enters the VTR mode regardless of the input selector setting.

Note

You cannot set to CAMERA mode (turn only the camera section on) with this use. For details on the operating modes, refer to the instruction manual of the CCD-V8E.

1-8. RECORDING TV PROGRAMMES [G]



Use the Remote Commander to operate the CCD-V8E video camera recorder. For operation on the recorder, see the instruction manual of the CCD-V8E.

1 Turn on the TV/monitor and set the programme selector or the input selector to the proper position to view the programme selected on the TT-V8EC.
2 Set the input selector on the TT-V8EC to TUNER.
3 Press the ON switch.
The ON/STANDBY lamp and the VTR POWER lamp on the recorder will light simultaneously.
4 Press the EJECT button on the recorder and insert a cassette.
5 Select the programme to be recorded.
6 Slide the ● switch to the right.
The ● lamp on the recorder will light and recording will begin.

To stop recording, press the ■ button.
To stop recording momentarily, press the II button.
The II lamp on the recorder will light.

The TV programme can be seen on the screen, but the picture will not be recorded.
To resume recording, press the II button again.
To protect the video heads and the tape, the pause mode will be automatically released after about 7 minutes and recording will stop.

To view another TV programme while recording, simply select the programme you want to view with the TV's programme selector.

1-9. PLAYING BACK A RECORDED TAPE H-1

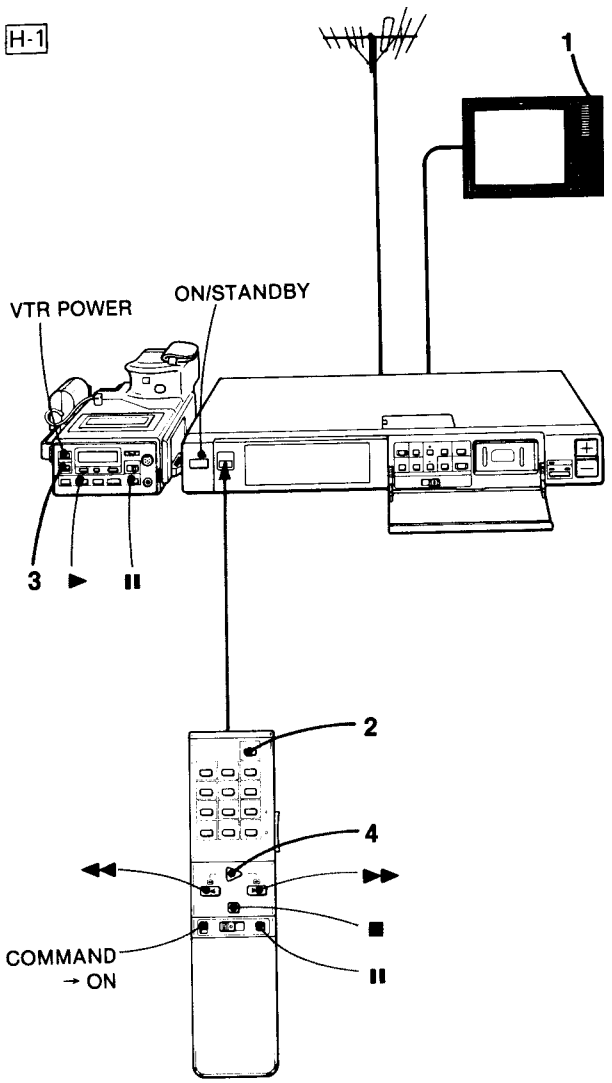
Use the Remote Commander to operate the CCD-V8E video camera recorder. For operation on the recorder, see the instruction manual of the CCD-V8E.

1 Turn on the TV/monitor and set the programme selector or the input selector to the proper position to view the programme selected on the TT-V8EC.
2 Press the ON switch.
The ON STANDBY lamp and the VTR POWER lamp on the recorder will light simultaneously.
3 Press the EJECT button on the recorder and insert the cassette.
4 Press the ▶ button. The ▶ lamp on the recorder will light and playback will begin.

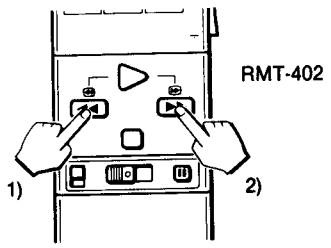
To stop playback, press the ■ button.
To rewind the tape, press the ◀◀ button.
To advance the tape, press the ▶▶ button.
To stop playback momentarily, press the ❚❚ button.
The ❚❚ lamp on the recorder will light.
Streaks will appear in the still picture and the sound will be cut out.
To resume playback, press the button again.
The pause mode will be automatically released after about 7 minutes and the playback will stop.

To search for a particular point while viewing the picture H-2
During playback, 1) keep pressing the ◀◀ button for backward movement, or 2) keep pressing the ▶▶ button for forward movement. You will see the picture moving rapidly.
At the desired point, release the button. Playback will resume at normal speed.

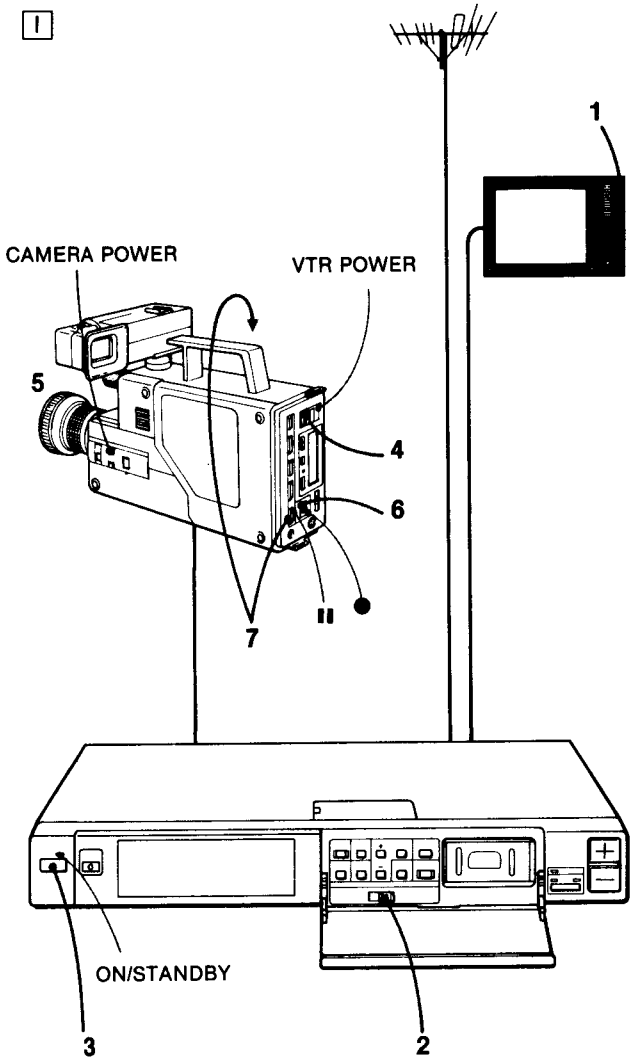
H-1



H-2



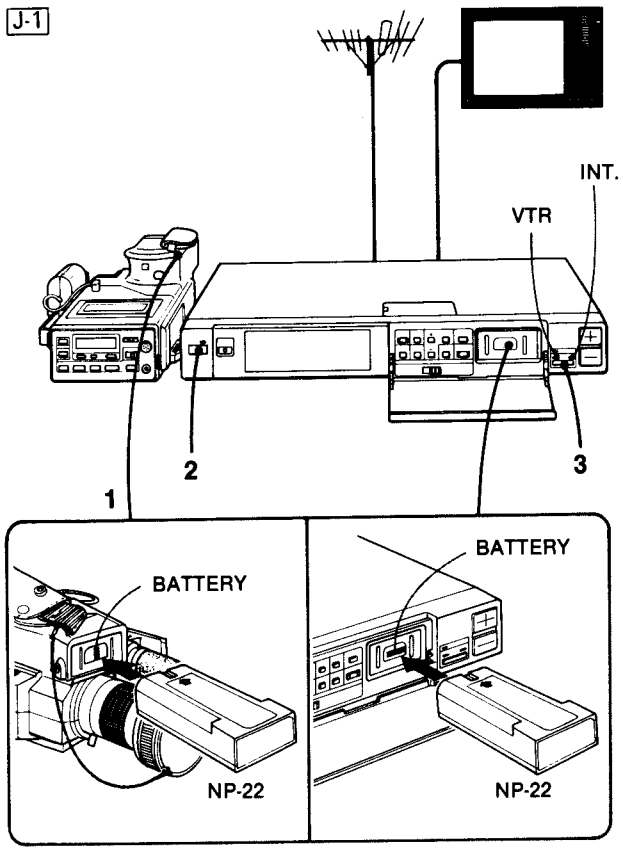
1-10. CAMERA RECORDING AND MONITORING [I]



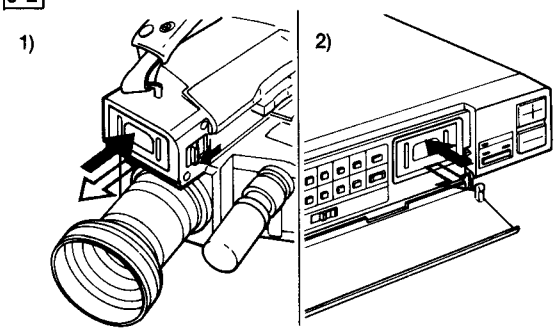
1 Turn on the TV/monitor and set the programme selector or the input selector to the position for viewing the programme selected on the TT-V8EC.
2 Set the input selector to CAMERA.
3 Press the ON/STANDBY switch.
The associated lamp and the VTR POWER and CAMERA POWER lamps on the CCD-V8E video camera recorder will light simultaneously.
4 Press the EJECT button and insert a cassette.
5 Adjust the viewfinder lens, white balance and focus. See the instruction manual of the recorder for details.
6 Slide the ● switch to the right.
The associated lamp and the II lamp will light and the recorder will enter the recording pause mode.
7 Press the REC START/STOP or the II button to start recording.
The recording can be monitored on the screen.

To stop recording, press the REC START/STOP or the II button again. The recorder enter the recording pause mode.
If you leave the recorder in the pause mode for 7 minutes or more, the pause mode will be automatically released and the recorder will enter the stop mode.
To remotely control the start/stop of the camera recording, use the ● switch and the II button on the Remote Commander.

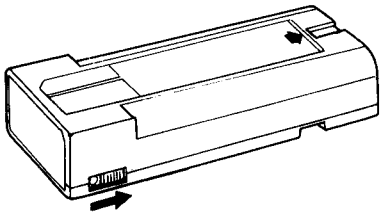
J-1



J-2



J-3



1-11. CHARGING BATTERY PACKS

The TT-V8EC charges the optional NP-22 battery pack(s) installed in its BATTERY compartment and/or the BATTERY compartment of the CCD-V8E video camera recorder.

How to charge J-1

1 Insert the battery pack(s) into the BATTERY compartment with the correct direction as indicated on the compartment lid and the battery pack.
To charge one battery, insert it into either of the compartments.
To charge two batteries, insert one into each compartment.
2 Press the ON/STADBY switch if it is on.*
3 Press the CHARGE button.
The VTR lamp will light and charging of the battery in the recorder will begin.
If the recorder is not connected or there is no battery pack inside the recorder, the INT. lamp will light after a few seconds and charging of the battery in the TT-V8EC will begin.

*If the recorder is not connected, it is not necessary to turn the TT-V8EC off, so you can charge while viewing a TV prlgramme.

When the battery is fully charged

The charging time for one battery pack is about one hour. When the battery is fully charged, the charging will stop and the corresponding VTR or INT. lamp will go off.

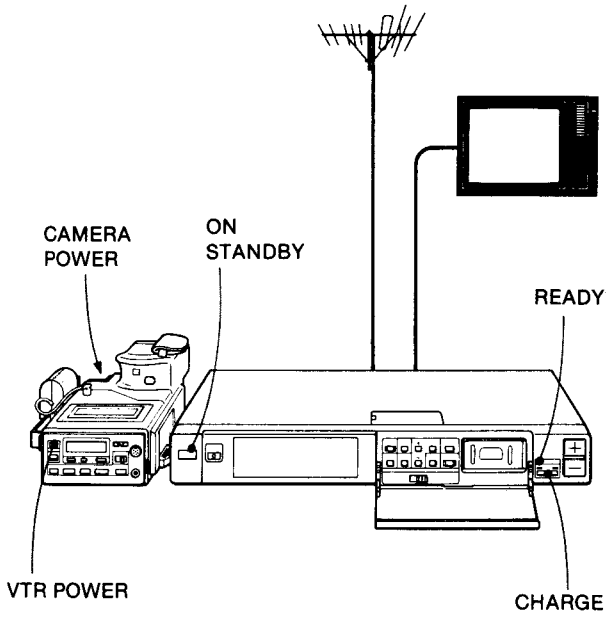
When battery packs are installed both in the recorder and the TT-V8EC, charging of the battery in the TT-V8EC will start automatically and the INT. lamp will light.

To remove the battery pack J-2

1) From the recorder: Push the battery pack in while sliding the ejector in the direction of the arrow.
2) From the TT-V8EC: Push the battery pack in and it will pop out.

After removing the fully charged battery pack(s), set the charging condition indicator on the battery pack so that the black mark appears. J-3

J-4



Charging standby condition J-4

The READY lamp lights in the following cases to indicate that the TT-V8EC is in the charging standby condition.

1) If the CHARGE button is pressed when the TT-V8EC and the recorder is in operation.

Charging starts automatically about 5 minutes after the recorder enters the stop mode.
During charging, the VTR POWER and CAMERA POWER lamps on the recorder go off but the ON STANDBY lamp on the TT-V8EC remains lit. You may operate the TT-V8EC.

⬇

When the charging is completed, **the recorder will be turned on.**

2) If timer-activated recording or quick timer recording begins during charging.

Charging resumes after the recording stops and the units are turned off.

To interrupt charging or release the charging standby condition, press the CHARGE button again.

Caution

Do not insert any object other than a battery pack into the BATTERY compartment.

Notes

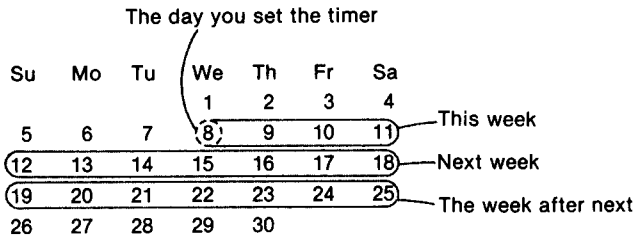
- Do not continuously recharge a charged battery pack because battery pack efficiency will deteriorate.
- Charge the battery pack within a temperature range of from 0°C to 40°C (32°F to 104°F).

1-12. TIMER ACTIVATED RECORDING

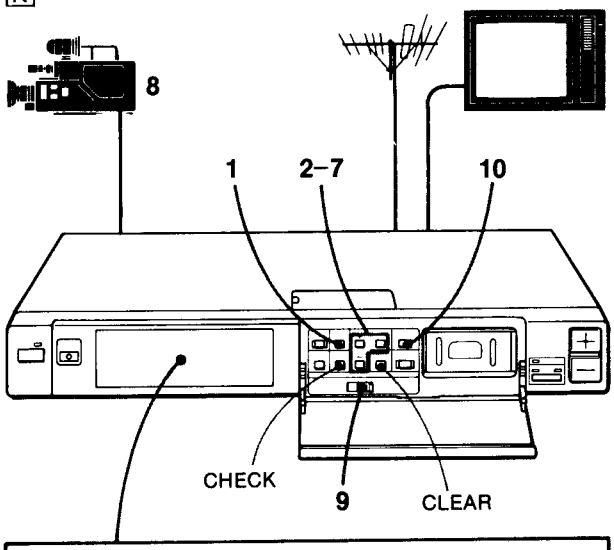
The timer can only be used to start and stop recording on the CCD-V8E video camera recorder.

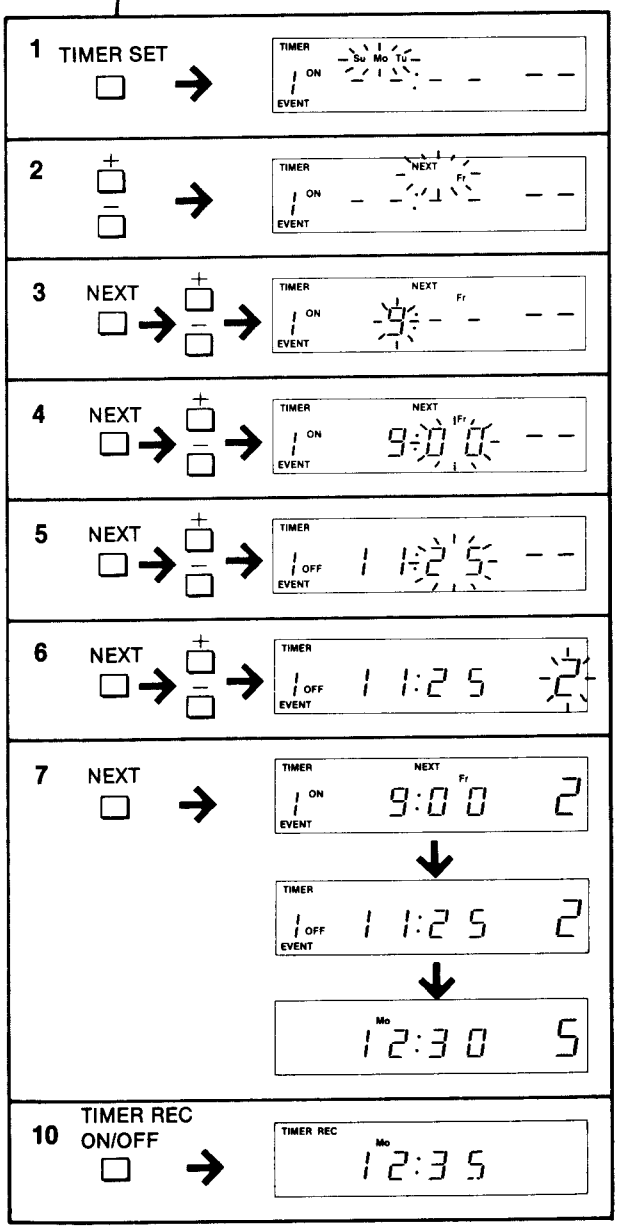
Four recording events can be set to be made all on the same day this week, next week, or the week after next, or on every day within this period, or on anytime within this period.

Possible days for recording


The day you set the timer
Su Mo Tu We Th Fr Sa
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
This week
Next week
The week after next

[K]





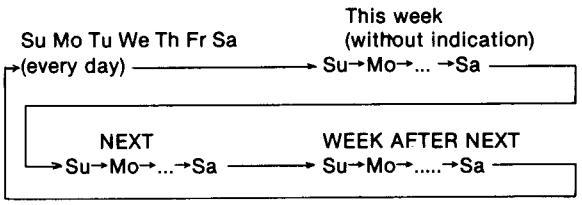
TO SET THE TIMER [K]

Before setting the timer, check that the clock has been set to the correct current time.

Example: To make a recording of TV programme 2 from 9:00 AM to 11:25 AM on Friday next week

1 Press the TIMER SET button.
An event number will appear that refers to the first programme you wish to record. If the timer memory has not been set for any programmes as yet, the number "1" will appear. Also, the days will flash.

2 Set the day by pressing the + or – button.
The day indication changes as follows.



3 Press the NEXT button and set the turn-on hour by pressing the + or – button.

4 Press the NEXT button and set the turn-on minute by pressing the + or – button.

5 Press the NEXT button and set the turn-off hour and minute with the + or – button.

6 With the input selector set to TUNER, press the NEXT button and select the TV programme to be recorded by pressing the + or – button.
To record programmes other than TV programmes, set the input selector to CAMERA or LINE.

7 Press the NEXT button.
The memorized turn-on time, turn-off time and the programme number will be displayed for about 2 seconds each, then the current time will appear.

To preset more events, press the TIMER SET again to display another empty event number, and repeat all steps above.

To activate the recording mode for the preset time

8 Check that:
- A cassette has been inserted into the recorder.
- The cassette is long enough to record the programme.
- The cassette does not have the red tab exposed.
- The recorder is connected.
- The recorder is not in operation.

9 Set the input selector on the TT-V8EC to the appropriate position.

10 Press the TIMER REC ON/OFF button.
The power will be turned off and "TIMER REC" indication will be displayed to indicate the recording standby mode.

Recording will start at the preset time and will automatically stop when the recording is completed.

Notice

- Timer setting can be made in all modes except the timer-activated recording and quick timer recording modes.
- When four events have been preset, the window shows the current time and the "ERR" indication even if the TIMER SET button is pressed.
To know the settings, press the CHECK button.
- When the time settings of turn-on and turn-off are the same, timer recording will continue to the end of the tape.
- If you press the TIMER SET button inadvertently, simply press the CLEAR button. The current time will be displayed.
- ONCE THE "TIMER REC" INDICATION HAS LIT UP, only the CHECK and TIMER REC ON/OFF buttons can be used.
- IF THE "ERR" INDICATION BLINKS when you press the TIMER REC ON/OFF button, check as in step 8.
- The ON/STANDBY lamp will light momentarily when the TIMER REC ON/OFF button is pressed in the power off mode.

BEFORE OR DURING TIMER RECORDING

To check the timer settings

Press the CHECK button. Each time the CHECK button is pressed, the display will change to the preset turn-on and turn-off times of each event in sequence, then to the current time.

Notes

- If no event has been preset, the display shows the current time even if the CHECK button is pressed.
- The settings can be checked in any mode. However, please note that, except during timer (including quick timer) recording, this unit receives TV programmes corresponding to the settings.

To change the settings

1 Press the TIMER REC ON/OFF button so that the "TIMER REC" indication goes off.
2 Press the CHECK button to select the setting to be changed.
3 Press the TIMER SET button.
4 Press the NEXT button as many as required for the item to be changed to blink.
5 Change the setting with the + or – button.
6 Press the NEXT button until the current time appears.
7 Press the TIEMR REC ON/OFF button to reactivate the timer recording mode.

To erase the memory of a particular event

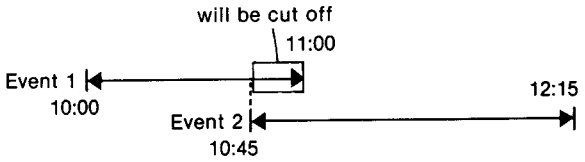
1 Press the TIMER ON/OFF button so that the "TIMER REC" indication goes off.
2 Press the CHECK button to select the event number to be erased.
3 Press the CLEAR button. The event will be erased.
4 If other events have been preset for recording, press the TIMER REC ON/OFF button to reactivate the timer recording mode.

To stop the on-going timer recording

Press the TIMER REC ON/OFF button so that the "TIMER REC" indication goes off. The recording stops and the units will be turned off automatically.

When the presettings of your timer-activated recordings overlap

There will be no error indication to inform you of the overlap. Even if there is an overlap, a recording will be made.



In this case, the recording of event 2 will begin before the first recording is completely finished. Consequently, the event 1 will be cut off in the middle of its recording.

When a power interruption occurs

If the clock shows "Su 0:00" and blinks, the power has been interrupted for more than about 50 seconds and all the timer settings have been erased. Reset the clock and the timer settings.

If the power has been interrupted for less than about 50 seconds, the timer programmes are retained in the memory and the on-going timer recording will resume with the "ERR" indication displayed when the power is resupplied.

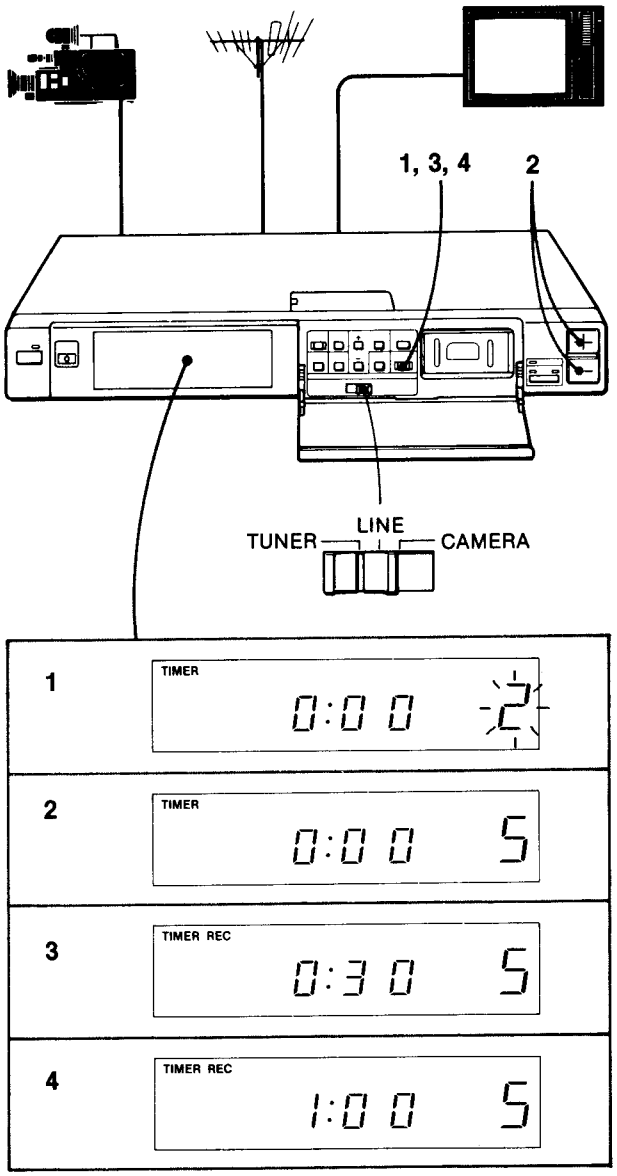
AFTER TIMER RECORDING

When a timer recording has been completed, the setting of the recorded event (except if it is an everyday setting) will be eliminated and all remaining events to be recorded will move up one position. For example, if you have preset 4 events, when the first timer recording is finished, the fourth position will become vacant. If the TIMER SET button is pressed, "EVENT 4" will appear in the window.

1-13. QUICK TIMER RECORDING

The quick timer can only be used to start and stop recording on the CCD-V8E video camera recorder.
In the stop mode, you can start timer recording immediately by pressing the QUICK TIMER button at least twice.
Two presses set the recording duration to 30 minutes. Three presses to 1 hour. Four presses to 1 hour and 30 minutes. Five presses to 2 hours. Six presses to the end of the tape.
In recording modes except the timer recording mode, you can also use this function to stop the recording automatically after the preset duration has elapsed.

[L]



To start recording immediately [L]
Before operation, set the input selector to the appropriate position.

1 Press the QUICK TIMER button when the recorder is in the stop mode or when the TT-V8EC and the recorder are turned off. "TIMER 0:00" will appear with the power turned on and the programme number previously selected will blink when the input selector is set to TUNER.
2 To record TV programmes, select the programme immediately by pressing the + or − PROGRAM button. If you do not advance to the next step, the units will be turned off after about 20 seconds.
3 Press the QUICK TIMER button so that recording starts. "TIMER REC 0:30" will appear.
4 Set the recording duration by pressing the button. The duration indication changes as follows:

0:00→0:30 (30 minutes)→1:00 (one hour)→1:30→2:00
E:nd (till tape end)←

As the recording continues, the duration indication decreases minute by minute to 0:00, when recording stops.

To extend the recording duration
The on-going recording duration can be extended simply by pressing the QUICK TIMER button.
The duration will be extended in units of 30 minutes with each pressing.
Example: When 0:25 is indicated,
0:25 → 0:30 → 1:00...

To cancel the quick timer function and stop the recording
There are four ways to cancel.
1) Press the ON/STANDBY switch on the TT-V8EC or the ON switch on the Remote Commander.
2) Press the TIMER REC ON/OFF button.
3) Press the QUICK TIMER button to set the duration to "0:00".
4) Press the ■ button on the recorder or on the Remote Commander.

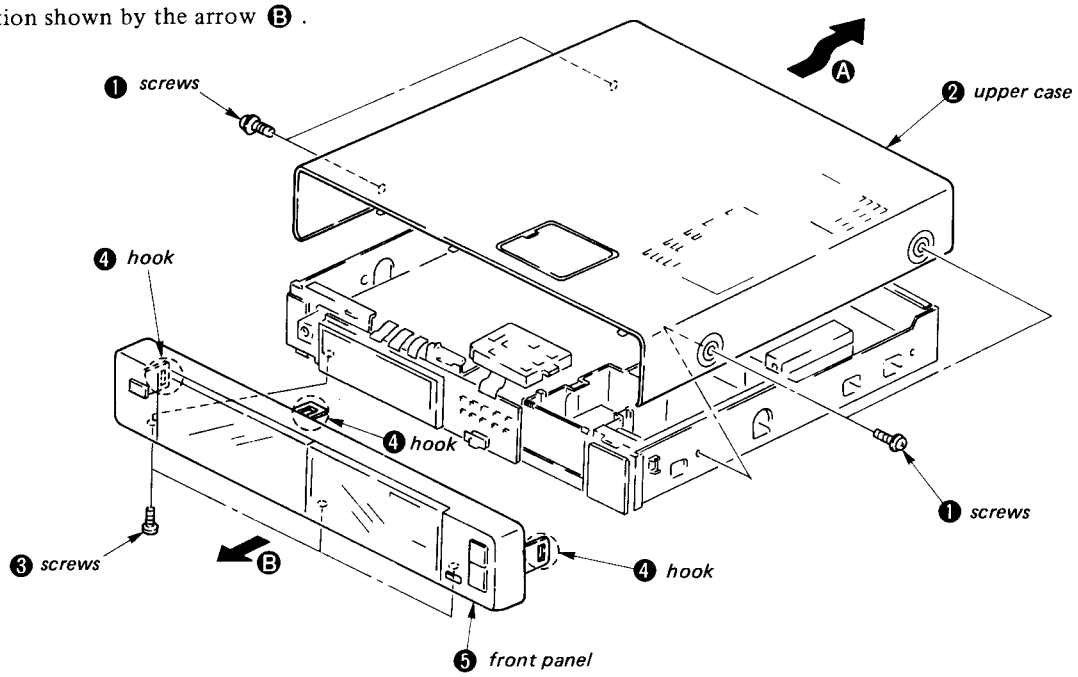
In the above cases 1), 2) and 3), the units will be turned off.

Notice
- IF THE "ERR" BLINKS when you press the QUICK TIMER button, check as in step 8 on page 20.
- While the quick timer is operating, any function on the recorder can be activated. You may stop the recording and play back the tape, if required.

SECTION 2
DISASSEMBLY

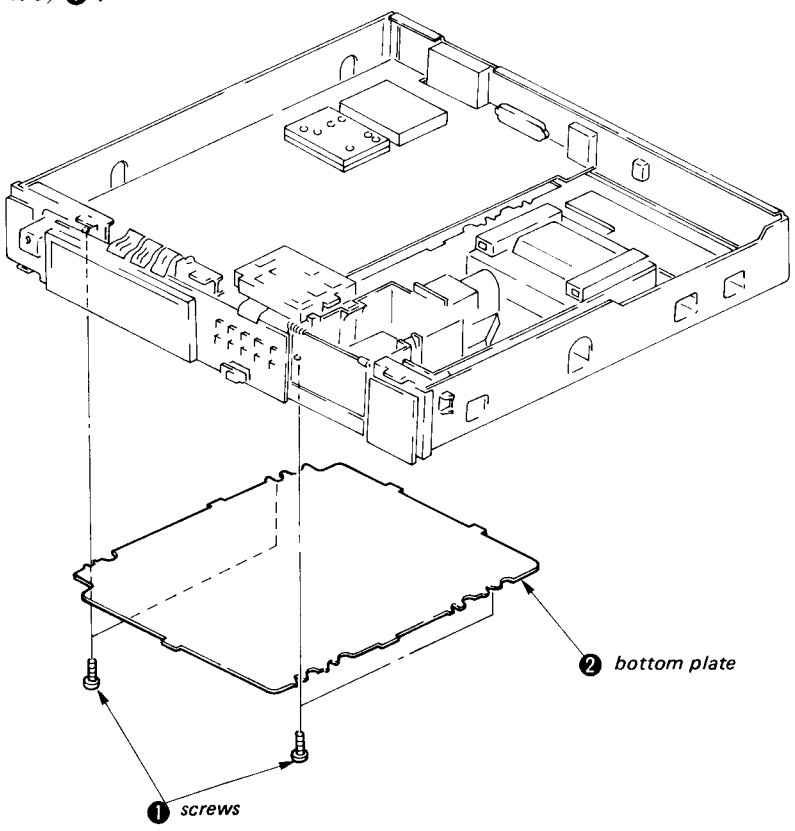
2-1. CASE AND FRONT PANEL REMOVAL

1) Remove the four screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Remove the three screws (BVTP3 x 8) ❸ .
4) Remove the three hooks ❹ and the front panel ❺ in the direction shown by the arrow Ⓑ .



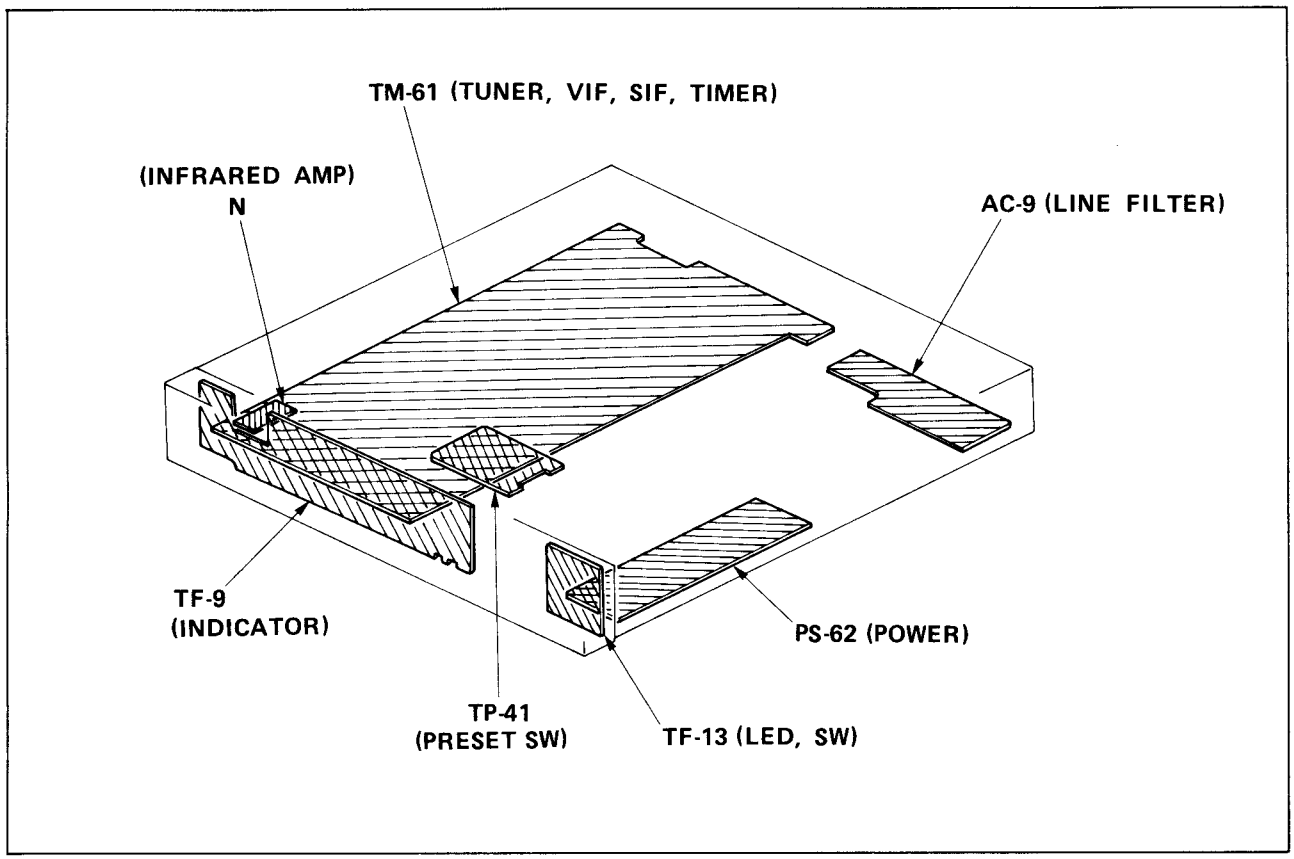
2-2. REMOVAL OF THE BOTTOM PLATE

1) Remove the four screws (BVTT3 x 6) ❶ .
2) Remove the bottom plate ❷ .

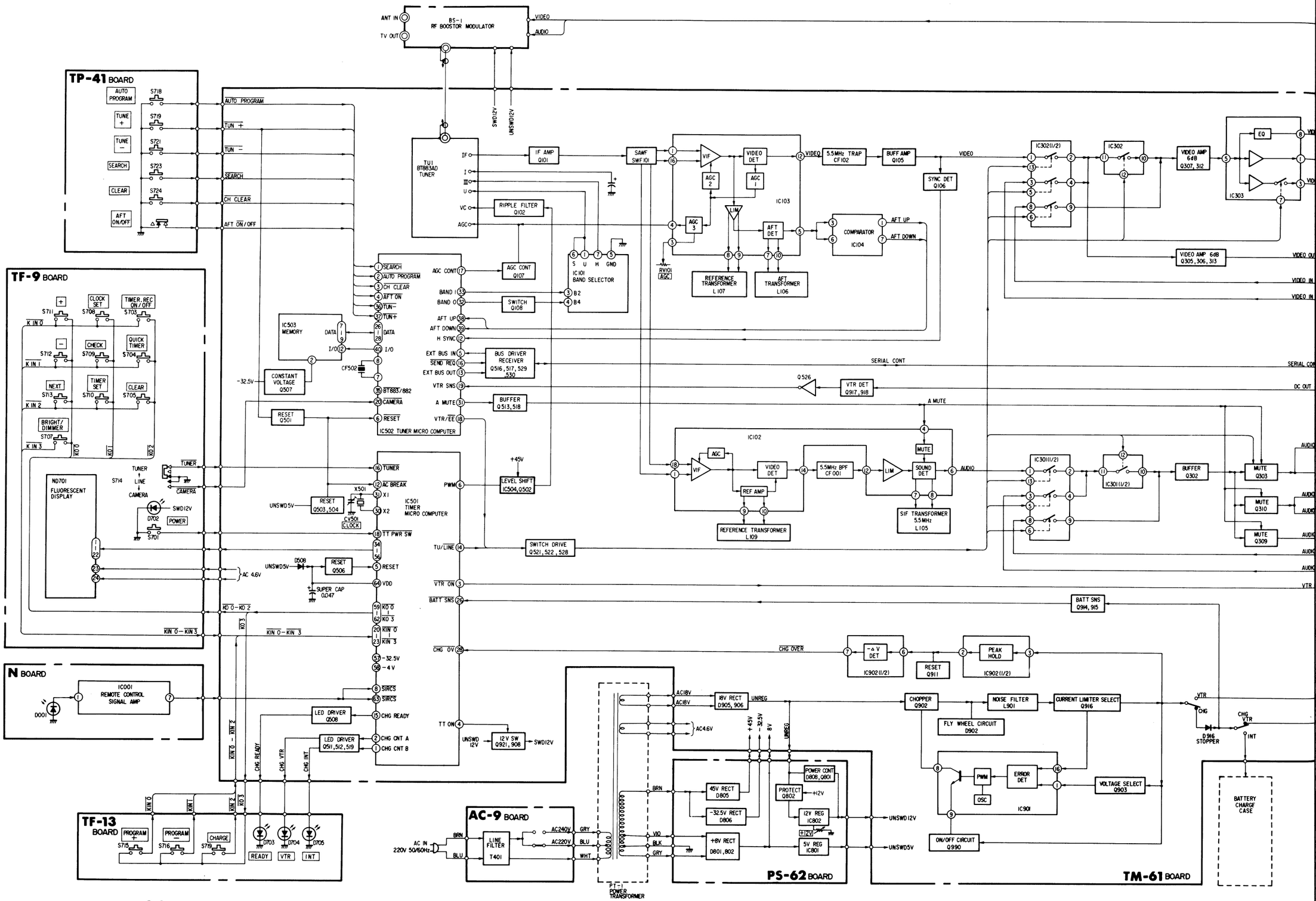


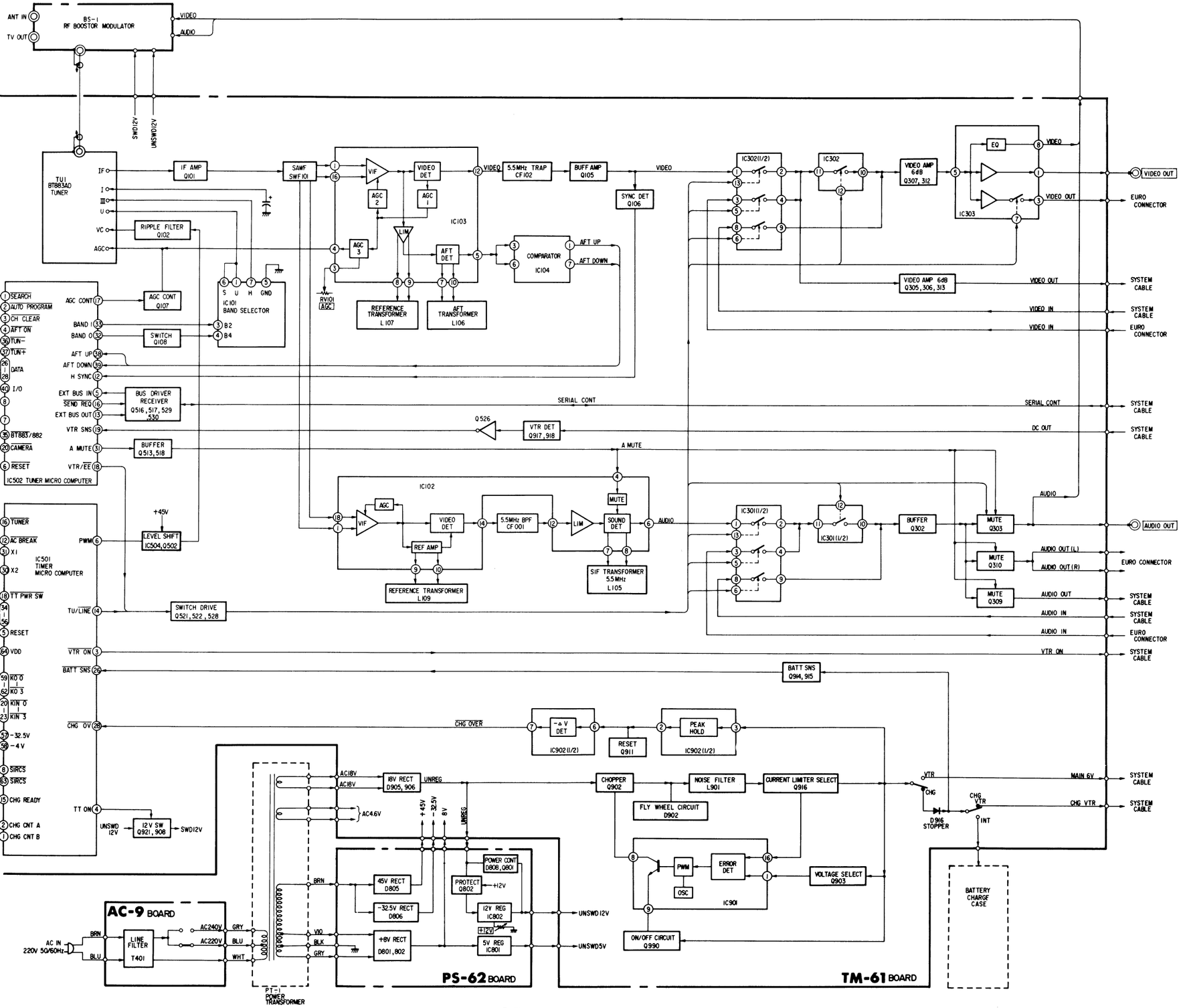
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION



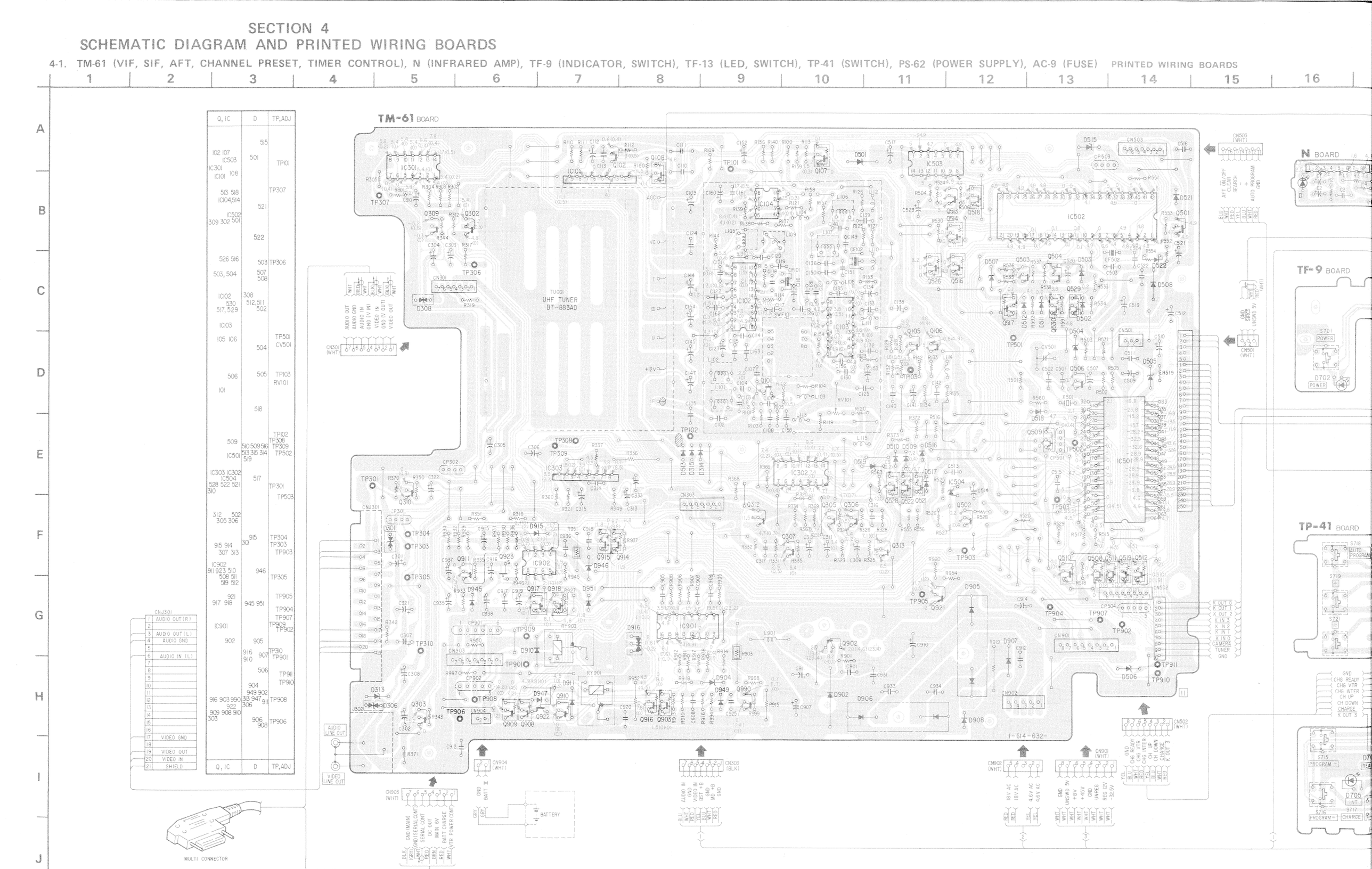
3-2. BLOCK DIAGRAM




ANT IN
TV OUT
BS-1
RF BOOSTOR MODULATOR
VIDEO
AUDIO
SWD12V
UNSWD12V
TU1
BT883AD
TUNER
IF
I
III
U
VC
AGC
IF AMP
Q101
SAWF
SWF101
VIF
VIDEO DET
AGC 2
AGC 1
IC103
LIM
AGC 3
AFT DET
COMPARATOR
IC104
AFT UP
AFT DOWN
RVI01
AGC
REFERENCE TRANSFORMER
L107
AFT TRANSFORMER
L106
VIDEO
5.5MHz TRAP
CF102
BUFF AMP
Q105
SYNC DET
Q106
RIPPLE FILTER
Q102
IC302(1/2)
IC302
VIDEO AMP
6dB
Q307, 312
EQ
IC303
VIDEO OUT
EURO CONNECTOR
VIDEO AMP 6dB
Q305, 306, 313
SYSTEM CABLE
VIDEO IN
EURO CONNECTOR
AGC CONT
Q107
IC101
BAND SELECTOR
S U H GND
BAND I
BAND O
SWITCH
Q108
B2
B4
AFT UP
AFT DOWN
H SYNC
SEARCH
AUTO PROGRAM
CH CLEAR
AFT ON
TUN−
TUN+
DATA
I/O
BT883/882
CAMERA
RESET
IC502 TUNER MICRO COMPUTER
EXT BUS IN
SEND REQ
EXT BUS OUT
BUS DRIVER RECEIVER
Q516, 517, 529, 530
SERIAL CONT
VTR SNS
A MUTE
BUFFER
Q513, 518
VTR/EE
Q526
VTR DET
Q917, 918
DC OUT
+45V
LEVEL SHIFT
IC504, Q502
IC102
AGC
VIF
VIDEO DET
REF AMP
5.5MHz BPF
CF001
LIM
SOUND DET
MUTE
SIF TRANSFORMER
5.5MHz
L105
REFERENCE TRANSFORMER
L109
AUDIO
IC301(1/2)
BUFFER
Q302
MUTE
Q303
MUTE
Q310
MUTE
Q309
AUDIO OUT
AUDIO OUT(L)
AUDIO OUT(R)
AUDIO IN
IC501
TIMER
MICRO COMPUTER
TUNER
AC BREAK
X1
X2
TT PWR SW
RESET
VDD
KO 0
KO 3
KIN 0
KIN 3
−32.5V
−4V
SIRCS
CHG READY
CHG CNT A
CHG CNT B
PWM
TU/LINE
SWITCH DRIVE
Q521, 522, 528
VTR ON
BATT SNS
Q914, 915
CHG OV
CHG OVER
−ΔV DET
IC902(1/2)
RESET
Q911
PEAK HOLD
IC902(1/2)
TT ON
UNSWD 12V
12V SW
Q921, 908
SWD12V
AC18V
AC18V
18V RECT
D905, 906
UNREG
AC4.6V
+45V
−32.5V
8V
UNREG
CHOPPER
Q902
NOISE FILTER
L901
CURRENT LIMITER SELECT
Q916
FLY WHEEL CIRCUIT
D902
VTR
CHG
D916
STOPPER
CHG VTR
INT
MAIN 6V
CHG VTR
BATTERY CHARGE CASE
AC-9 BOARD
AC IN
220V 50/60Hz
BRN
BLU
LINE FILTER
T401
AC240V
AC220V
GRY
BLU
WHT
VIO
BLK
GRY
PT-1
POWER TRANSFORMER
BRN
45V RECT
D805
−32.5V RECT
D806
+8V RECT
D801, 802
POWER CONT
D808, Q801
PROTECT
Q802
+12V
12V REG
IC802
+12V
5V REG
IC801
UNSWD12V
UNSWD5V
PS-62 BOARD
PWM
OSC
ERROR DET
IC901
VOLTAGE SELECT
Q903
ON/OFF CIRCUIT
Q990
TM-61 BOARD

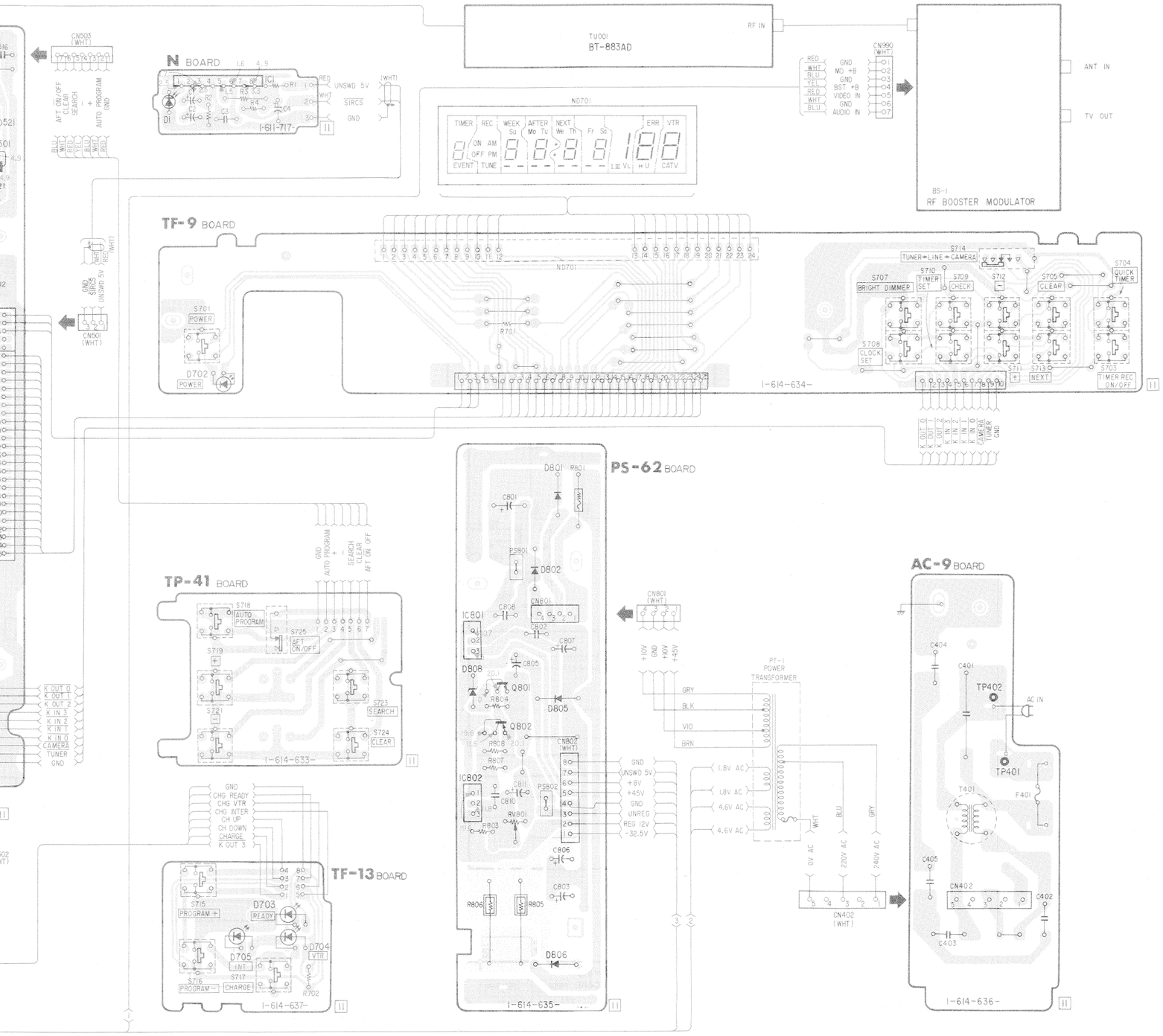
SECTION 4
SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

4-1. TM-61 (VIF, SIF, AFT, CHANNEL PRESET, TIMER CONTROL), N (INFRARED AMP), TF-9 (INDICATOR, SWITCH), TF-13 (LED, SWITCH), TP-41 (SWITCH), PS-62 (POWER SUPPLY), AC-9 (FUSE) PRINTED WIRING BOARDS

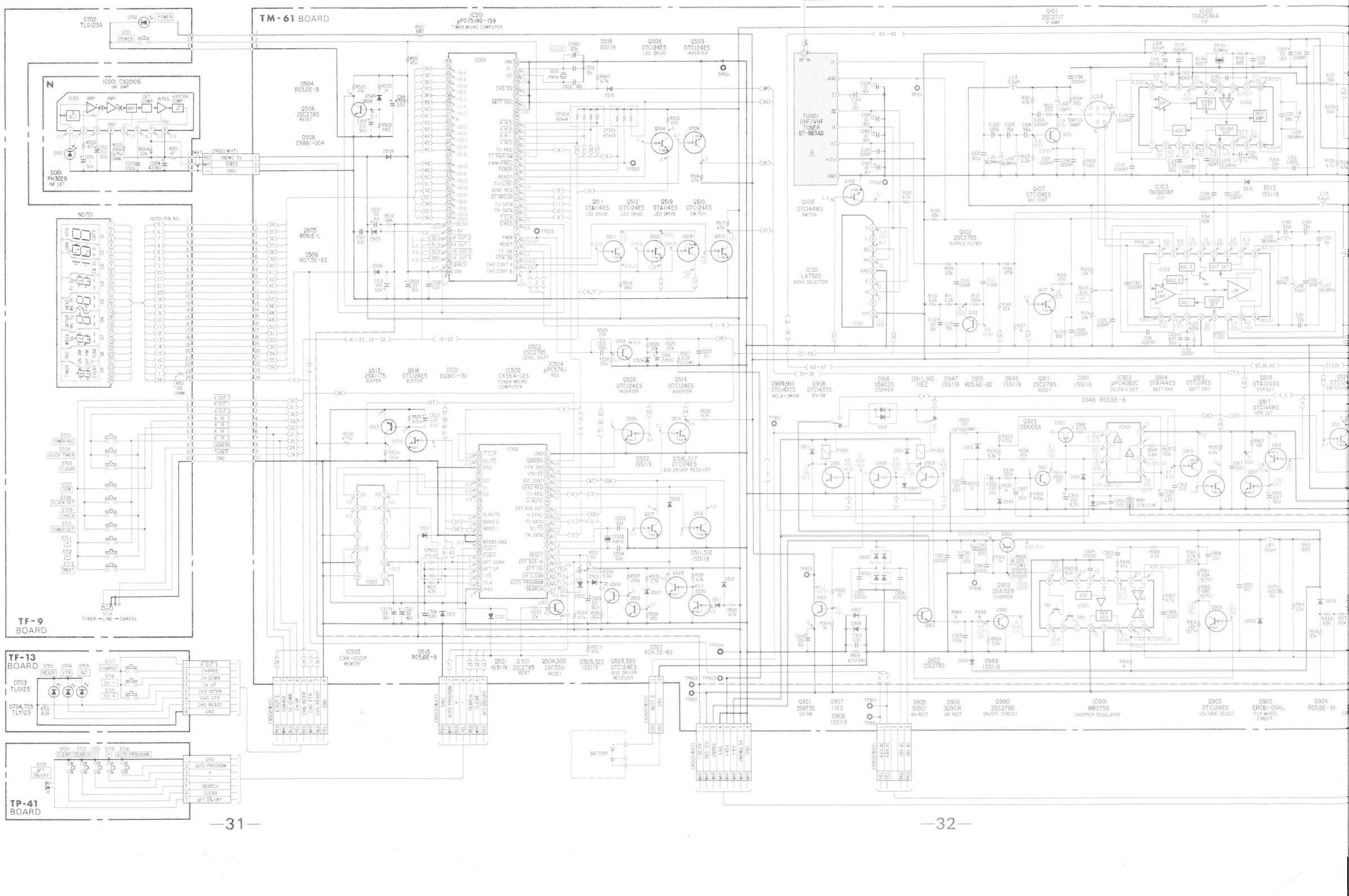


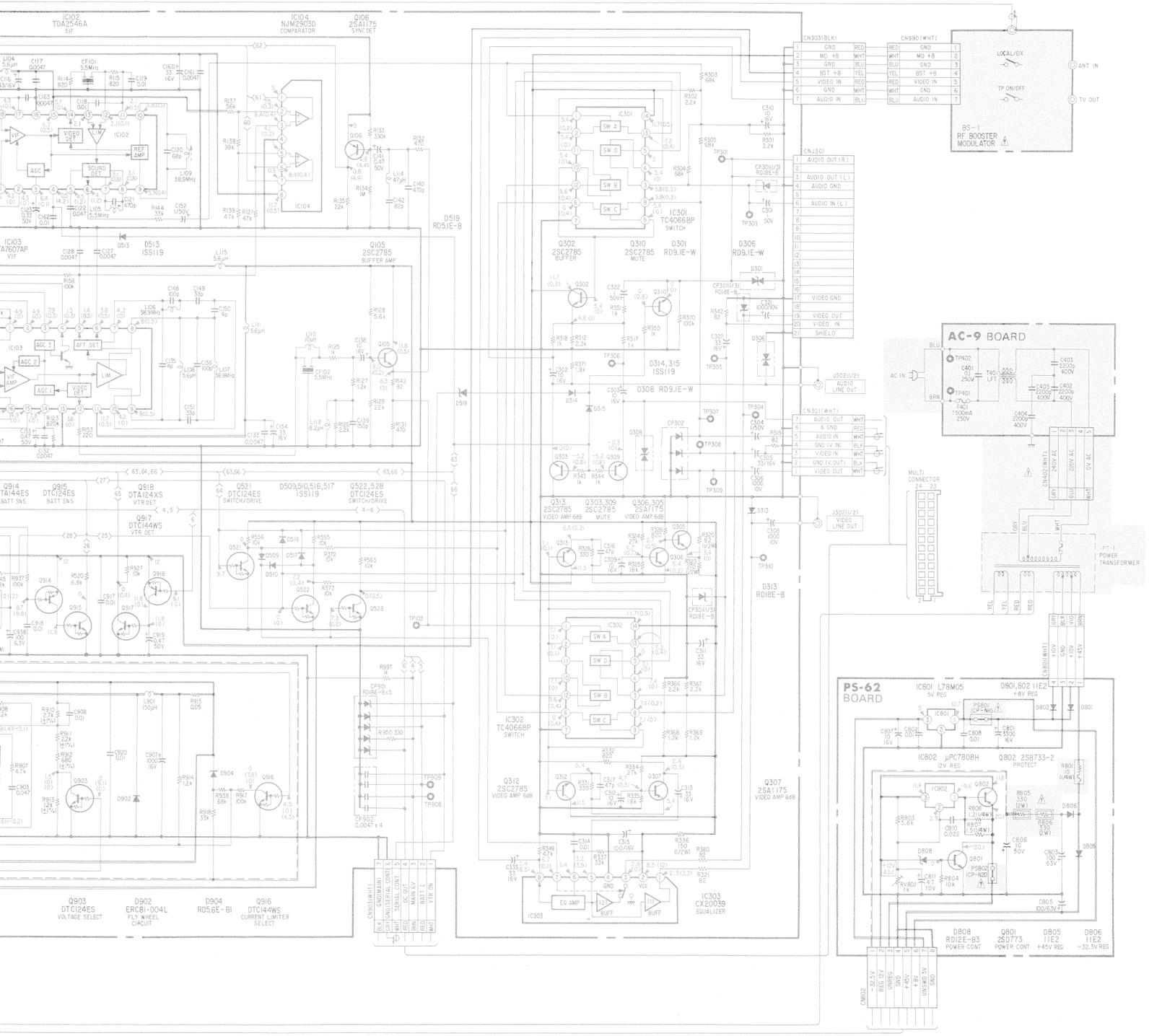
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A B C D E F G H I J



TM-61 (VIF, SIF, AFT, CHANNEL PRESET, TIMER CONTROL), N (INFRARED AMP), TF-9 (INDICATOR, SWITCH), TF-13 (LED, SWITCH), TP-41 (SWITCH), PS-62 (POWER SUPPLY), AC-9 (FUSE) SCHEMATIC DIAGRAM





Note:

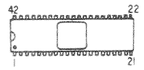
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : panel designation.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).
  no mark: During CH-5 reception and "00.00" display.
  ( ) : During battery charging.
  : During TIMER set.
  Marked ✳ is not able to measure the voltage of it's position.
- : adjustment for repair.
- : B+ bus.
- : B− bus.
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

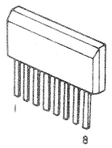
When indicating parts by reference number, please include the board name.

4-2. SEMICONDUCTORS

CX564

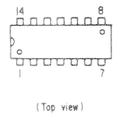


CX20039

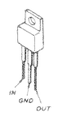


CX20106

CXK1001P

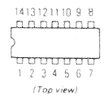


L78M05

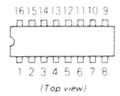


LA7920

HD14066BP
TC4066BP
μPD4066BC

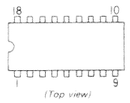


MB3759
TA7607AP
TL494CN



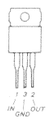
TL082CP
NJM2903D
μPC393C
μPC4082C

TDA2546A

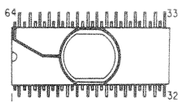


μPC574J

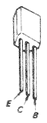
μPC7808H



μPD7519G-159



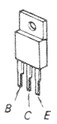
2SA1048-GR
2SA1115
2SC536NP
2SC536SP
2SC2458
2SC2603
2SC2669
DTA114ES
DTA124XS
DTA144ES
DTC124ES
DTC143TS
DTC144WS



2SA933S
2SC1740S

2SA1175
2SC2785

2SA1328



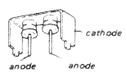
2SB733
2SB733-4
2SD773

2SC2712
2SC2216

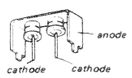
2SK105A

10E2
11E2
ERA81-004
ERB12-02RK

30DC1

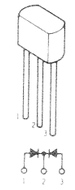


30DC1R

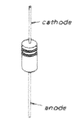


1SS119
1SS133
1SS148

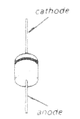
1SS227
MC931



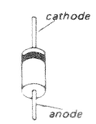
EQB01-30
SIB01-02



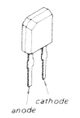
ERC81-004
ERC81-004L



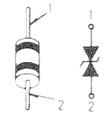
HZ5.1E-B3
RD3.0E-B
RD3.6E-B
RD4.3E-B1
RD4.3E-B2
RD4.3E-B3
RD5.1E-B3
RD5.6E-B
RD5.6E-B1
RD5.6E-B2
RD7.5E-B1
RD7.5E-B2
RD7.5E-B3
RD9.1E-L1
RD9.1E-L2
RD9.1E-L3
RD12E-B3
RD18E-B



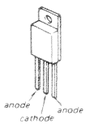
PH302B



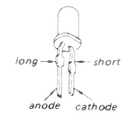
RD9.1E-W



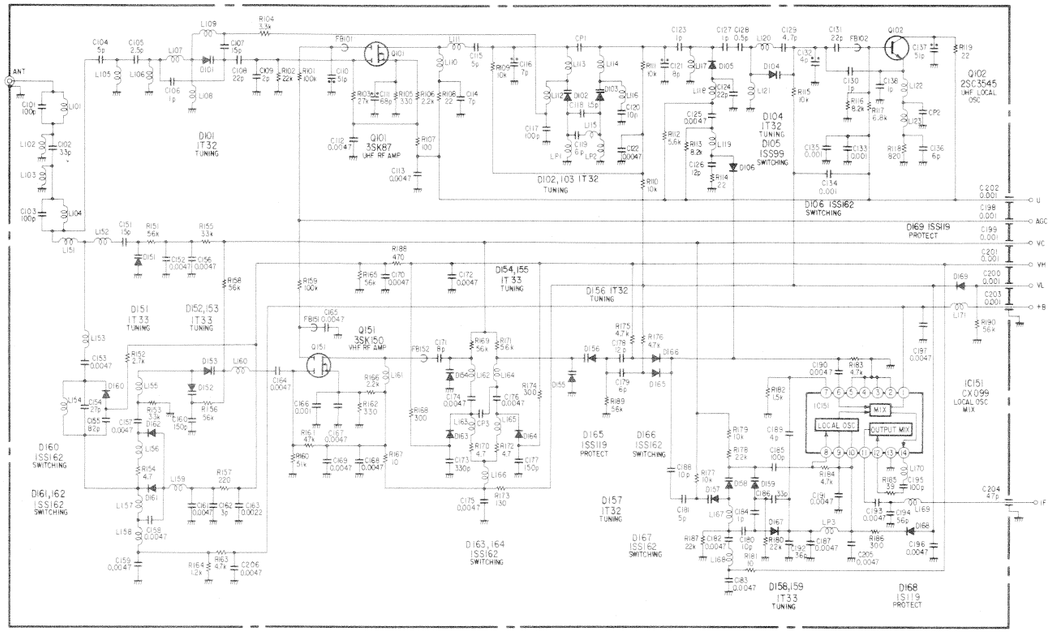
S5KC20



TLG123A
TLO123
TLY123



4-3. TUNER SCHEMATIC DIAGRAM
UHF/VHF TUNER
– BT-883AD –



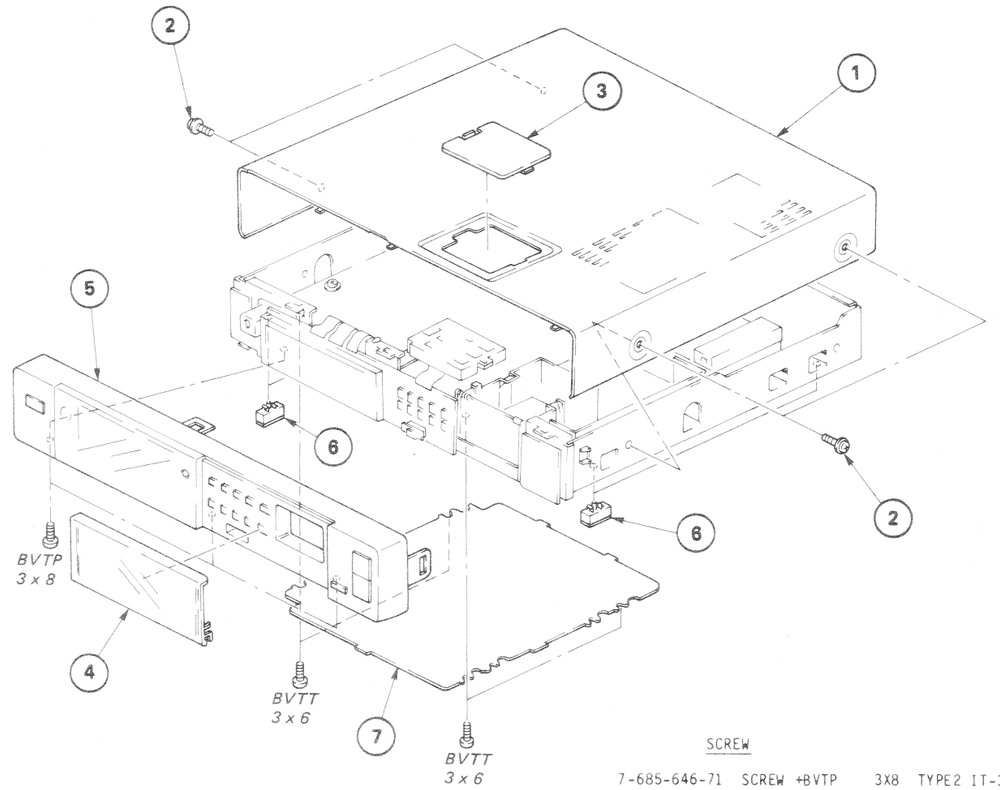
SECTION 5
EXPLODED VIEWS

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-1. FRONT PANEL AND CABINET ASSEMBLIES

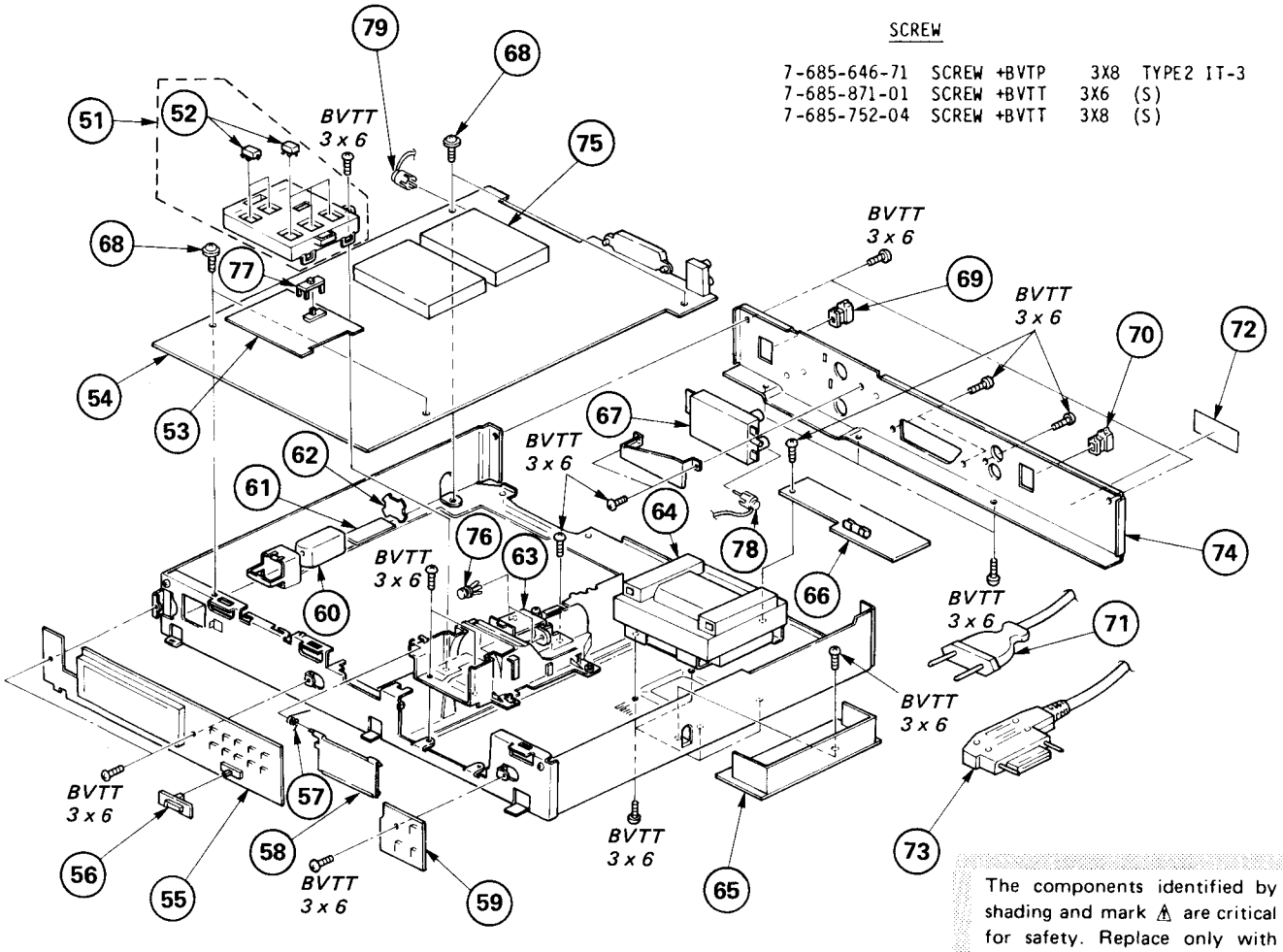


SCREW

7-685-646-71 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-871-01 SCREW +BVTT 3X6 (S)
7-685-752-04 SCREW +BVTT 3X8 (S)

No.	Part No.	Description	Remark
1	2-352-630-01	CASE, UPPER	
2	4-886-821-01	SCREW, M3 CASE	
3	*2-352-647-01	LID, PRESET	
4	2-352-619-01	DOOR, FRONT	
5	X-2352-601-2	PANEL SUB ASSY, FRONT	
6	X-4907-603-1	FOOT ASSY	
7	*2-352-625-01	PLATE, BOTTOM	

5-2. CHASSIS ASSEMBLIES


SCREW
7-685-646-71 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-871-01 SCREW +BVTT 3X6 (S)
7-685-752-04 SCREW +BVTT 3X8 (S)
BVTT 3 x 6
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	*X-2352-606-1	CASE SUB ASSY, PRESET	52
52	2-291-041-00	BUTTON (A), PRESET	
53	*1-614-633-11	TP-41 BOARD	
54	*A-7060-058-A	COMPLETE PCB, TM-61	
55	*1-614-634-11	TF-9 BOARD	
56	2-352-612-01	KEY TOP (S)	
57	2-352-602-01	SPRING	
58	2-352-639-01	LID, INNER, BATTERY CASE	
59	*1-614-637-11	TF-13 BOARD	
60	*4-342-117-00	CASE, SHIELD (MAIN), R	
61	*1-611-717-11	N BOARD	
62	*4-342-118-00	LID, SHIELD CASE, R	
63	*X-2352-603-1	CASE SUB ASSY, BATTERY	
64	⚠.1-447-942-11	TRANSFORMER, POWER	PT-1
65	*1-614-635-11	PS-62 BOARD	
66	*1-614-636-11	AC-9 BOARD	
67	⚠.1-464-422-11	MODULATOR, RF BOOSTER(RFU-822)	BS-1
68	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6	
69	2-352-626-01	BUSHING, CORD	
70	⚠.3-703-244-02	BUSHING (2104), CORD	
71	⚠.1-534-817-31	CORD, POWER	
72	*2-352-634-01	LABEL, MODEL NUMBER	
73	1-557-745-11	PLUG, CONNECTOR 24P	
74	*2-352-624-01	PANEL, REAR	
75	⚠.1-463-577-31	TUNER, ET(BT-883AD)	TU001
76	3-531-576-21	RIVET	
77	3-670-148-11	KEY (P), SLIDE	
78	*1-555-110-00	CABLE, PIN	

N **TM-61**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : μF, PF : μμF

COILS

- MMH : mH, UH : μH

Ref.No	Part No.	Description				Remark
	*1-611-717-11	N BOARD				
		********				
	*4-342-117-00	CASE, SHIELD (MAIN), R				
	*4-342-118-00	LID, SHIELD CASE, R				
		CAPACITOR				
C1	1-123-611-00	ELECT	1MF	20%	50V	
C2	1-123-613-00	ELECT	3.3MF	20%	50V	
C3	1-102-112-00	CERAMIC	330PF	10%	50V	
C4	1-123-821-00	ELECT	47MF	20%	16V	
		DIODE				
D1	8-719-110-32	DIODE PH302B				
		IC				
IC1	8-752-010-60	IC CX20106				
		RESISTOR				
R1	1-247-799-00	CARBON	47	5%	1/6W	
R2	1-247-775-00	CARBON	4.7	5%	1/6W	
R3	1-214-784-00	METAL	200K	1%	1/4W	
R4	1-247-863-00	CARBON	22K	5%	1/6W	
**********						
	*A-7060-058-A	TM-61 BOARD, COMPLETE				
		**********				
⚠	1-463-577-31	TUNER, ET (BT-883AD)				
	*2-352-614-01	CASE (MAIN), SHIELD, VIF				
	4-363-146-00	HEAT SINK, VOUT				
	*4-875-327-01	HEAT SINK				
	7-682-549-09	SCREW +B 3X6				

Ref.No	Part No.	Description				Remark
		CAPACITOR				
C102	1-102-530-00	CERAMIC	120PF	5%	50V	
C103	1-102-851-00	CERAMIC	15PF	5%	50V	
C104	1-102-523-00	CERAMIC	56PF	5%	50V	
C105	1-102-527-00	CERAMIC	82PF	5%	50V	
C106	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C107	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C108	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C109	1-123-356-00	ELECT	10MF	20%	16V	
C110	1-108-599-00	MYLAR	0.068MF	10%	50V	
C111	1-108-599-00	MYLAR	0.068MF	10%	50V	
C112	1-123-318-00	ELECT	33MF	20%	16V	
C113	1-102-963-00	CERAMIC	33PF	5%	50V	
C114	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C115	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C116	1-123-318-00	ELECT	33MF	20%	16V	
C117	1-101-003-00	CERAMIC	0.0047MF		50V	
C118	1-101-004-00	CERAMIC	0.01MF		50V	
C119	1-101-004-00	CERAMIC	0.01MF		50V	
C120	1-102-525-00	CERAMIC	68PF	5%	50V	
C121	1-104-069-00	POLYSTYRENE	470PF	5%	50V	
C122	1-108-595-00	MYLAR	0.047MF	10%	50V	
C123	1-123-609-00	ELECT	0.33MF	20%	50V	
C124	1-108-845-00	MYLAR	0.047MF	10%	50V	
C125	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C126	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C127	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C128	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C130	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C132	1-101-003-00	CERAMIC	0.0047MF		50V	
C133	1-101-003-00	CERAMIC	0.0047MF		50V	
C134	1-123-318-00	ELECT	33MF	20%	16V	
C135	1-102-504-00	CERAMIC	4PF	0.25PF	50V	
C136	1-102-529-00	CERAMIC	100PF	5%	50V	

Ref.No	Part No.	Description			Remark
C138	1-123-356-00	ELECT	10MF	20%	16V
C139	1-101-361-00	CERAMIC	150PF	5%	50V
C140	1-102-114-00	CERAMIC	470PF	10%	50V
C141	1-123-379-00	ELECT	0.47MF	20%	50V
C142	1-102-527-00	CERAMIC	82PF	5%	50V
C144	1-123-356-00	ELECT	10MF	20%	16V
C145	1-123-356-00	ELECT	10MF	20%	16V
C147	1-123-356-00	ELECT	10MF	20%	16V
C148	1-102-529-00	CERAMIC	100PF	5%	50V
C149	1-102-518-00	CERAMIC	33PF	5%	50V
C150	1-102-504-00	CERAMIC	4PF	0.25PF	50V
C151	1-102-518-00	CERAMIC	33PF	5%	50V
C152	1-123-380-00	ELECT	1MF	20%	50V
C153	1-123-379-00	ELECT	0.47MF	20%	50V
C154	1-123-356-00	ELECT	10MF	20%	16V
C156	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C158	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C160	1-123-318-00	ELECT	33MF	20%	16V
C161	1-101-003-00	CERAMIC	0.0047MF		50V
C162	1-101-004-00	CERAMIC	0.01MF		50V
C163	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C301	1-123-380-00	ELECT	1MF	20%	50V
C302	1-123-356-00	ELECT	10MF	20%	16V
C303	1-123-356-00	ELECT	10MF	20%	16V
C304	1-123-380-00	ELECT	1MF	20%	50V
C305	1-123-318-00	ELECT	33MF	20%	16V
C306	1-123-311-00	ELECT	1000MF	20%	10V
C307	1-123-318-00	ELECT	33MF	20%	16V
C308	1-123-311-00	ELECT	1000MF	20%	10V
C309	1-123-356-00	ELECT	10MF	20%	16V
C310	1-123-356-00	ELECT	10MF	20%	16V
C311	1-123-318-00	ELECT	33MF	20%	16V
C312	1-123-356-00	ELECT	10MF	20%	16V
C313	1-123-318-00	ELECT	33MF	20%	16V
C314	1-101-004-00	CERAMIC	0.01MF		50V
C315	1-123-333-00	ELECT	100MF	20%	16V
C316	1-101-880-00	CERAMIC	47PF	5%	50V
C317	1-101-880-00	CERAMIC	47PF	5%	50V
C321	1-123-311-00	ELECT	1000MF	20%	10V
C322	1-123-380-00	ELECT	1MF	20%	50V
C333	1-123-318-00	ELECT	33MF	20%	16V
C501	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C502	1-102-513-00	CERAMIC	18PF	5%	50V
C503	1-102-959-00	CERAMIC	22PF	5%	50V
C504	1-102-959-00	CERAMIC	22PF	5%	50V
C507	1-123-381-00	ELECT	2.2MF	20%	50V
C509	1-123-318-00	ELECT	33MF	20%	16V
C510	1-123-318-00	ELECT	33MF	20%	16V
C511	1-101-004-00	CERAMIC	0.01MF		50V
C512	1-123-360-00	ELECT	100MF	20%	50V
C513	1-108-603-00	MYLAR	0.1MF	5%	50V
C514	1-123-356-00	ELECT	10MF	20%	50V
C515	1-102-106-00	CERAMIC	100PF	10%	50V

Ref.No	Part No.	Description			Remark
C516	1-101-004-00	CERAMIC	0.01MF		50V
C517	1-123-318-00	ELECT	33MF	20%	16V
C519	1-125-299-00	DOUBLE LAYERS	47000MF		5.5V
C520	1-123-382-00	ELECT	3.3MF	20%	50V
C521	1-123-318-00	ELECT	33MF	20%	16V
C522	1-101-004-00	CERAMIC	0.01MF		50V
C523	1-123-379-00	ELECT	0.47MF	20%	50V
C901	1-161-055-00	CERAMIC	0.022MF	10%	50V
C903	1-161-059-00	CERAMIC	0.047MF	10%	25V
C904	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C905	1-101-004-00	CERAMIC	0.01MF		50V
C907	1-123-324-00	ELECT	1000MF	20%	16V
C908	1-101-004-00	CERAMIC	0.01MF		50V
C910	1-125-349-00	ELECT	6800MF	20%	25V
C911	1-123-356-00	ELECT	10MF	20%	25V
C912	1-101-004-00	CERAMIC	0.01MF		50V
C914	1-123-333-00	ELECT	100MF	20%	16V
C915	1-123-307-00	ELECT	100MF	20%	6.3V
C916	1-123-307-00	ELECT	100MF	20%	6.3V
C917	1-101-004-00	CERAMIC	0.01MF		50V
C918	1-101-004-00	CERAMIC	0.01MF		50V
C919	1-123-379-00	ELECT	0.47MF	20%	50V
C920	1-101-004-00	CERAMIC	0.01MF		50V
C925	1-102-973-00	CERAMIC	100PF	5%	50V
C931	1-101-002-00	CERAMIC	0.0022MF		50V
C933	1-101-002-00	CERAMIC	0.0022MF		50V
C934	1-101-002-00	CERAMIC	0.0022MF		50V
C935	1-123-308-00	ELECT	220MF	20%	10V
C936	1-101-004-00	CERAMIC	0.01MF		50V
C937	1-123-380-00	ELECT	1MF	20%	50V
C938	1-123-307-00	ELECT	100MF	20%	6.3V

FILTER

CF101	1-527-263-00	CERAMIC FILTER (5.5MHZ)
CF102	1-404-134-00	TRAP, CERAMIC (5.5MHZ)
CF502	1-567-192-11	OSCILLATOR, CERAMIC (4MHZ)

CONNECTOR

CN301	*1-564-273-00	PIN, CONNECTOR 7P
CN303	*1-560-591-00	PIN, CONNECTOR 7P
CN501	*1-560-466-00	PIN, CONNECTOR 3P
CN502	*1-560-470-00	PIN, CONNECTOR 8P
CN503	*1-560-591-00	PIN, CONNECTOR 7P
CN901	*1-560-896-00	PIN, CONNECTOR 8P
CN902	*1-508-743-00	PIN, CONNECTOR 5P
CN903	*1-564-443-11	PLUG, CONNECTOR (2.5MM) 7P
CN904	*1-560-890-00	PIN, CONNECTOR 2P

JACK

CNJ301	1-561-534-00	SOCKET 21P

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
		TRIMMER	
CV501	1-141-022-21	CAP, TRIMMER, CERAMIC 20PF	
		DIODE	
D301	8-719-108-12	DIODE RD9.1E-W	
D306	8-719-108-12	DIODE RD9.1E-W	
D308	8-719-108-12	DIODE RD9.1E-W	
D313	8-719-118-07	DIODE RD18E-B	
D314	8-719-911-19	DIODE 1SS119	
D315	8-719-911-19	DIODE 1SS119	
D501	8-719-931-30	DIODE EQB01-30	
D502	8-719-911-19	DIODE 1SS119	
D503	8-719-911-19	DIODE 1SS119	
D504	8-719-130-07	DIODE RD3.0E-B	
D505	8-719-101-73	DIODE RD9.1E-L2	
D506	8-719-100-44	DIODE RD7.5E-B2	
D507	8-719-100-23	DIODE RD4.3E-B2	
D508	8-719-981-01	DIODE ERA81-004	
D509	8-719-911-19	DIODE 1SS119	
D510	8-719-911-19	DIODE 1SS119	
D511	8-719-911-19	DIODE 1SS119	
D512	8-719-911-19	DIODE 1SS119	
D513	8-719-911-19	DIODE 1SS119	
D515	8-719-156-07	DIODE RD5.6E-B	
D516	8-719-911-19	DIODE 1SS119	
D517	8-719-911-19	DIODE 1SS119	
D518	8-719-911-19	DIODE 1SS119	
D519	8-719-151-07	DIODE RD5.1E-B	
D521	8-719-911-19	DIODE 1SS119	
D522	8-719-911-19	DIODE 1SS119	
D902	8-719-981-00	DIODE ERC81-004	
D904	8-719-100-34	DIODE RD5.6E-B1	
D905	8-719-200-56	DIODE 30DC1	
D906	8-719-200-58	DIODE 30DC1R	
D907	8-719-200-02	DIODE 10E2	
D908	8-719-911-19	DIODE 1SS119	
D910	8-719-200-02	DIODE 10E2	
D911	8-719-200-02	DIODE 10E2	
D915	8-719-100-35	DIODE RD5.6E-B2	
D916	8-719-550-02	DIODE S5KC20	
D945	8-719-911-19	DIODE 1SS119	
D946	8-719-136-07	DIODE RD3.6E-B	
D947	8-719-911-19	DIODE 1SS119	
D949	8-719-911-19	DIODE 1SS119	
D951	8-719-911-19	DIODE 1SS119	
		IC	
IC101	8-759-800-12	IC LA7920	
IC102	8-759-909-54	IC TDA2546A	
IC103	8-759-276-07	IC TA7607AP	
IC104	8-759-729-03	IC NJM2903D	
IC301	8-759-240-66	IC TC4066BP	

Ref.No	Part No.	Description	Remark
IC302	8-759-240-66	IC TC4066BP	
IC303	8-752-003-90	IC CX20039	
IC501	8-759-102-77	IC UPD7519G-159	
IC502	8-755-640-30	IC CX564	
IC503	8-752-320-11	IC CXK1001P	
IC504	8-759-157-40	IC UPC574J	
IC901	8-759-937-59	IC MB3759	
IC902	8-759-990-82	IC TL082CP	
		JACK	
J302	1-507-976-11	JACK, PIN 2P	
		COIL	
L101	1-404-476-00	COIL, IF 38.9MHZ	
L102	1-404-476-00	COIL, IF 38.9MHZ	
L103	1-408-592-00	MICRO INDUCTOR 1.2UH	
L104	1-408-600-00	MICRO INDUCTOR 5.6UH	
L105	1-404-477-00	COIL, IF 5.5MHZ	
L106	1-404-521-11	VIFT 38.9MHZ	
L107	1-404-521-11	VIFT 38.9MHZ	
L108	1-408-600-00	MICRO INDUCTOR 5.6UH	
L109	1-404-493-00	COIL 38.9MHZ	
L110	1-408-409-00	MICRO INDUCTOR 10UH	
L111	1-408-600-00	MICRO INDUCTOR 5.6UH	
L112	1-408-602-00	MICRO INDUCTOR 8.2UH	
L113	1-408-600-00	MICRO INDUCTOR 5.6UH	
L114	1-408-417-00	MICRO INDUCTOR 47UH	
L115	1-408-600-00	MICRO INDUCTOR 5.6UH	
L901	1-408-943-00	COIL, CHOKE 15UH	
		TRANSISTOR	
Q101	8-729-203-28	TRANSISTOR 2SC2216	
Q102	8-729-245-83	TRANSISTOR 2SC2458	
Q105	8-729-245-83	TRANSISTOR 2SC2458	
Q106	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q107	8-729-900-36	TRANSISTOR DTC124ES	
Q108	8-729-900-85	TRANSISTOR DTC144WS	
Q302	8-729-606-34	TRANSISTOR 2SC2603-G	
Q303	8-729-245-83	TRANSISTOR 2SC2458	
Q305	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q306	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q307	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q309	8-729-245-83	TRANSISTOR 2SC2458	
Q310	8-729-245-83	TRANSISTOR 2SC2458	
Q312	8-729-245-83	TRANSISTOR 2SC2458	
Q313	8-729-245-83	TRANSISTOR 2SC2458	
Q501	8-729-245-83	TRANSISTOR 2SC2458	
Q502	8-729-245-83	TRANSISTOR 2SC2458	
Q503	8-729-853-63	TRANSISTOR 2SC536SP	
Q504	8-729-853-63	TRANSISTOR 2SC536SP	
Q506	8-729-245-83	TRANSISTOR 2SC2458	
Q508	8-729-900-36	TRANSISTOR DTC124ES	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q509	8-729-900-36	TRANSISTOR DTC124ES	
Q510	8-729-900-36	TRANSISTOR DTC124ES	
Q511	8-729-900-61	TRANSISTOR DTA114ES	
Q512	8-729-900-36	TRANSISTOR DTC124ES	
Q513	8-729-245-83	TRANSISTOR 2SA1048-GR	
Q514	8-729-900-36	TRANSISTOR DTC124ES	
Q516	8-729-900-36	TRANSISTOR DTC124ES	
Q517	8-729-900-36	TRANSISTOR DTC124ES	
Q518	8-729-900-36	TRANSISTOR DTC124ES	
Q519	8-729-900-61	TRANSISTOR DTA114ES	
Q521	8-729-900-36	TRANSISTOR DTC124ES	
Q522	8-729-900-36	TRANSISTOR DTC124ES	
Q526	8-729-900-36	TRANSISTOR DTC124ES	
Q528	8-729-900-36	TRANSISTOR DTC124ES	
Q529	8-729-900-36	TRANSISTOR DTC124ES	
Q530	8-729-900-36	TRANSISTOR DTC124ES	
Q902	8-729-201-86	TRANSISTOR 2SA1328	
Q903	8-729-900-36	TRANSISTOR DTC124ES	
Q908	8-729-900-74	TRANSISTOR DTC143TS	
Q909	8-729-900-74	TRANSISTOR DTC143TS	
Q910	8-729-900-74	TRANSISTOR DTC143TS	
Q911	8-729-245-83	TRANSISTOR 2SC2458	
Q914	8-729-900-65	TRANSISTOR DTA144ES	
Q915	8-729-900-36	TRANSISTOR DTC124ES	
Q916	8-729-900-85	TRANSISTOR DTC144WS	
Q917	8-729-900-85	TRANSISTOR DTC144WS	
Q918	8-729-900-67	TRANSISTOR DTA124XS	
Q921	8-729-113-33	TRANSISTOR 2SB733-4	
Q922	8-729-245-83	TRANSISTOR 2SC2458	
Q923	8-729-115-30	TRANSISTOR 2SK105A	
Q990	8-729-245-83	TRANSISTOR 2SC2458	

RESISTOR

Ref.No	Part No.	Description				Remark
R100	1-247-867-00	CARBON	33K	5%	1/6W	
R101	1-247-847-00	CARBON	4.7K	5%	1/6W	
R102	1-247-815-00	CARBON	220	5%	1/6W	
R103	1-247-839-00	CARBON	2.2K	5%	1/6W	
R104	1-247-819-00	CARBON	330	5%	1/6W	
R105	1-247-813-00	CARBON	180	5%	1/6W	
R109	1-247-843-00	CARBON	3.3K	5%	1/6W	
R110	1-247-839-00	CARBON	2.2K	5%	1/6W	
R111	1-247-839-00	CARBON	2.2K	5%	1/6W	
R112	1-247-891-00	CARBON	330K	5%	1/6W	
R113	1-247-877-00	CARBON	82K	5%	1/6W	
R114	1-247-829-00	CARBON	820	5%	1/6W	
R115	1-247-829-00	CARBON	820	5%	1/6W	
R119	1-247-835-00	CARBON	1.5K	5%	1/6W	
R120	1-247-835-00	CARBON	1.5K	5%	1/6W	
R121	1-247-871-00	CARBON	47K	5%	1/6W	
R123	1-247-901-00	CARBON	820K	5%	1/6W	
R125	1-247-831-00	CARBON	1K	5%	1/6W	
R126	1-247-839-00	CARBON	2.2K	5%	1/6W	
R127	1-247-833-00	CARBON	1.2K	5%	1/6W	
R128	1-247-849-00	CARBON	5.6K	5%	1/6W	
R129	1-247-863-00	CARBON	22K	5%	1/6W	
R131	1-247-823-00	CARBON	470	5%	1/6W	
R132	1-247-823-00	CARBON	470	5%	1/6W	
R133	1-247-891-00	CARBON	330K	5%	1/6W	
R134	1-247-903-00	CARBON	1M	5%	1/6W	
R135	1-247-863-00	CARBON	22K	5%	1/6W	
R137	1-247-873-00	CARBON	56K	5%	1/6W	
R138	1-247-869-00	CARBON	39K	5%	1/6W	
R139	1-247-871-00	CARBON	47K	5%	1/6W	
R140	1-247-863-00	CARBON	22K	5%	1/6W	
R142	1-247-805-00	CARBON	82	5%	1/6W	
R144	1-247-867-00	CARBON	33K	5%	1/6W	
R153	1-247-815-00	CARBON	220	5%	1/6W	
R154	1-247-837-00	CARBON	1.8K	5%	1/6W	
R156	1-247-895-00	CARBON	470K	5%	1/6W	
R157	1-247-831-00	CARBON	1K	5%	1/6W	
R158	1-247-879-00	CARBON	100K	5%	1/6W	
R159	1-247-871-00	CARBON	47K	5%	1/6W	
R160	1-247-847-00	CARBON	4.7K	5%	1/6W	
R301	1-247-839-00	CARBON	2.2K	5%	1/6W	
R302	1-247-839-00	CARBON	2.2K	5%	1/6W	
R303	1-247-875-00	CARBON	68K	5%	1/6W	
R304	1-247-875-00	CARBON	68K	5%	1/6W	
R305	1-247-875-00	CARBON	68K	5%	1/6W	
R312	1-247-839-00	CARBON	2.2K	5%	1/6W	
R317	1-247-831-00	CARBON	1K	5%	1/6W	
R318	1-247-831-00	CARBON	1K	5%	1/6W	
R319	1-247-805-00	CARBON	82	5%	1/6W	
R320	1-244-847-51	CARBON	82	5%	1/2W	
R321	1-247-805-00	CARBON	82	5%	1/6W	
R323	1-247-226-00	CARBON	270	5%	1/2W	
R324	1-247-865-00	CARBON	27K	5%	1/6W	
R325	1-247-861-00	CARBON	18K	5%	1/6W	
R326	1-247-829-00	CARBON	820	5%	1/6W	
R328	1-247-819-00	CARBON	330	5%	1/6W	
R331	1-247-819-00	CARBON	330	5%	1/6W	
R332	1-247-829-00	CARBON	820	5%	1/6W	
R334	1-247-865-00	CARBON	27K	5%	1/6W	
R335	1-247-861-00	CARBON	18K	5%	1/6W	
R336	1-247-220-00	CARBON	150	5%	1/2W	
R337	1-247-867-00	CARBON	33K	5%	1/6W	
R342	1-247-805-00	CARBON	82	5%	1/6W	
R343	1-247-831-00	CARBON	1K	5%	1/6W	
R344	1-247-831-00	CARBON	1K	5%	1/6W	
R349	1-247-847-00	CARBON	4.7K	5%	1/6W	
R350	1-247-831-00	CARBON	1K	5%	1/6W	
R351	1-247-831-00	CARBON	1K	5%	1/6W	
R360	1-247-805-00	CARBON	82	5%	1/6W	
R366	1-247-839-00	CARBON	2.2K	5%	1/6W	
R367	1-247-839-00	CARBON	2.2K	5%	1/6W	
R368	1-247-833-00	CARBON	1.2K	5%	1/6W	
R369	1-247-833-00	CARBON	1.2K	5%	1/6W	
R370	1-247-879-00	CARBON	100K	5%	1/6W	
R371	1-247-837-00	CARBON	1.8K	5%	1/6W	
R372	1-247-855-00	CARBON	10K	5%	1/6W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R373	1-247-855-00	CARBON	10K	5%	1/6W	
R501	1-247-827-00	CARBON	680	5%	1/6W	
R502	1-247-827-00	CARBON	680	5%	1/6W	
R503	1-247-831-00	CARBON	1K	5%	1/6W	
R504	1-247-879-00	CARBON	100K	5%	1/6W	
R505	1-247-871-00	CARBON	47K	5%	1/6W	
R506	1-247-895-00	CARBON	470K	5%	1/6W	
R515	1-247-823-00	CARBON	470	5%	1/6W	
R516	1-247-847-00	CARBON	4.7K	5%	1/6W	
R517	1-247-847-00	CARBON	4.7K	5%	1/6W	
R518	1-247-821-00	CARBON	390	5%	1/6W	
R519	1-247-875-00	CARBON	68K	5%	1/6W	
R520	1-247-851-00	CARBON	6.8K	5%	1/6W	
R524	1-247-895-00	CARBON	470K	5%	1/6W	
R525	1-247-863-00	CARBON	22K	5%	1/6W	
R526	1-247-863-00	CARBON	22K	5%	1/6W	
R527	1-247-248-00	CARBON	2.2K	5%	1/2W	
R528	1-247-863-00	CARBON	22K	5%	1/6W	
R529	1-247-863-00	CARBON	22K	5%	1/6W	
R530	1-247-847-00	CARBON	4.7K	5%	1/6W	
R531	1-247-871-00	CARBON	47K	5%	1/6W	
R533	1-247-879-00	CARBON	100K	5%	1/6W	
R534	1-247-847-00	CARBON	4.7K	5%	1/6W	
R535	1-247-817-00	CARBON	270	5%	1/6W	
R536	1-247-823-00	CARBON	470	5%	1/6W	
R537	1-247-879-00	CARBON	100K	5%	1/6W	
R538	1-247-879-00	CARBON	100K	5%	1/6W	
R551	1-247-847-00	CARBON	4.7K	5%	1/6W	
R552	1-247-871-00	CARBON	47K	5%	1/6W	
R553	1-247-857-00	CARBON	12K		1/6W	
R554	1-247-849-00	CARBON	5.6K	5%	1/6W	
R555	1-247-855-00	CARBON	10K	5%	1/6W	
R556	1-247-855-00	CARBON	10K	5%	1/6W	
R560	1-247-847-00	CARBON	4.7K	5%	1/6W	
R563	1-247-855-00	CARBON	10K	5%	1/6W	
R591	1-247-847-00	CARBON	4.7K	5%	1/6W	
R592	1-247-847-00	CARBON	4.7K	5%	1/6W	
R901	1-247-831-00	CARBON	1K	5%	1/6W	
R903	⚠1-206-648-00	METAL OXIDE	220	5%	2W	F
R905	1-247-853-00	CARBON	8.2K	5%	1/6W	
R906	1-247-871-00	CARBON	47K	5%	1/6W	
R907	1-247-847-00	CARBON	4.7K	5%	1/6W	
R908	1-247-839-00	CARBON	2.2K	5%	1/6W	
R910	1-215-431-00	METAL	2.7K	1%	1/6W	
R911	1-215-429-00	METAL	2.2K	1%	1/6W	
R912	1-215-417-00	METAL	680	1%	1/6W	
R913	1-215-423-00	METAL	1.2K	1%	1/6W	
R914	1-247-833-00	CARBON	1.2K	5%	1/6W	
R915	1-217-625-00	RES, METAL PLATE 0.05				
R916	1-247-831-00	CARBON	1K	5%	1/6W	
R917	1-247-879-00	CARBON	100K	5%	1/6W	
R918	1-247-867-00	CARBON	33K	5%	1/6W	
R919	1-247-188-00	CARBON	4.7	5%	1/2W	
R920	1-247-831-00	CARBON	1K	5%	1/6W	
R927	1-247-855-00	CARBON	10K	5%	1/6W	
R929	1-247-895-00	CARBON	470K	5%	1/6W	
R930	1-247-843-00	CARBON	3.3K	5%	1/6W	
R931	1-247-831-00	CARBON	1K	5%	1/6W	
R932	1-247-895-00	CARBON	470K	5%	1/6W	
R933	1-247-831-00	CARBON	1K	5%	1/6W	
R934	1-247-887-00	CARBON	220K	5%	1/6W	
R935	1-247-795-00	CARBON	33	5%	1/6W	
R936	1-247-871-00	CARBON	47K	5%	1/6W	
R937	1-247-879-00	CARBON	100K	5%	1/6W	
R938	1-247-875-00	CARBON	68K	5%	1/6W	
R945	1-247-851-00	CARBON	6.8K	5%	1/6W	
R946	1-247-895-00	CARBON	470K	5%	1/6W	
R950	1-247-819-00	CARBON	330	5%	1/6W	
R951	1-247-250-00	CARBON	2.7K	5%	1/2W	
R952	1-246-449-00	CARBON	100	1%	1/4W	
R954	1-247-831-00	CARBON	1K	5%	1/6W	
R994	1-247-831-00	CARBON	1K	5%	1/6W	
R997	1-247-831-00	CARBON	1K	5%	1/6W	
R998	1-247-831-00	CARBON	1K	5%	1/6W	
R999	1-247-843-00	CARBON	3.3K	5%	1/6W	

VARIABLE RESISTOR

RV101	1-228-630-00	RES, ADJ, METAL GLAZE 4.7K

RELAY

RY901	1-515-551-11	RELAY
RY903	1-515-551-11	RELAY

FILTER

SWF101	1-404-438-00	FILTER, SAW

CRYSTAL

X501	1-527-550-11	VIBRATOR, CRYSTAL

****

*1-614-633-11 TP-41 BOARD
****

SWITCH

S718	1-554-174-00	SWITCH, KEY BOARD
S719	1-554-174-00	SWITCH, KEY BOARD
S721	1-554-174-00	SWITCH, KEY BOARD
S723	1-554-174-00	SWITCH, KEY BOARD
S724	1-554-174-00	SWITCH, KEY BOARD
S725	1-553-716-00	SWITCH, SLIDE

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*1-614-634-11	TF-9 BOARD **********	
	*3-662-205-00	HOLDER (E), LED	
		DIODE	
D702	8-719-812-33	DIODE TLG123A	
		INDICATOR TUBE	
ND701	1-519-335-11	INDICATOR TUBE, FLUORESCENT	
		RESISTOR	
R701	1-246-419-25	CARBON 5.6 5% 1/4W	
		SWITCH	
S701	1-554-174-00	SWITCH, KEY BOARD	
S703	1-554-174-00	SWITCH, KEY BOARD	
S704	1-554-174-00	SWITCH, KEY BOARD	
S705	1-554-174-00	SWITCH, KEY BOARD	
S707	1-554-174-00	SWITCH, KEY BOARD	
S708	1-554-174-00	SWITCH, KEY BOARD	
S709	1-554-174-00	SWITCH, KEY BOARD	
S710	1-554-174-00	SWITCH, KEY BOARD	
S711	1-554-174-00	SWITCH, KEY BOARD	
S712	1-554-174-00	SWITCH, KEY BOARD	
S713	1-554-174-00	SWITCH, KEY BOARD	
S714	1-553-754-00	SWITCH, SLIDE	
**********			
	*1-614-635-11	PS-62 BOARD **********	
	2-832-007-00	BUSHING (K), INSULATING	
	3-660-978-00	SHEET, HEAT RESISTING	
	7-685-793-04	SCREW +BVTT 2.6X8 (S)	
	7-685-871-01	SCREW +BVTT 3X6 (S)	
		CAPACITOR	
C801	1-124-416-00	ELECT 3300MF 20% 16V	
C802	1-101-004-00	CERAMIC 0.01MF 50V	
C803	1-123-374-00	ELECT 100MF 20% 63V	
C805	1-123-374-00	ELECT 100MF 20% 63V	
C806	1-123-356-00	ELECT 10MF 20% 50V	
C807	1-123-356-00	ELECT 10MF 20% 16V	
C808	1-101-004-00	CERAMIC 0.01MF 50V	
C810	1-101-005-00	CERAMIC 0.022MF 50V	
C811	1-123-306-00	ELECT 47MF 20% 10V	
		CONNECTOR	
CN801	*1-508-797-00	PIN, CONNECTOR 4P	

Ref.No	Part No.	Description	Remark
		DIODE	
D801	8-719-200-02	DIODE 10E2	
D802	8-719-200-02	DIODE 10E2	
D805	8-719-200-02	DIODE 10E2	
D806	8-719-200-02	DIODE 10E2	
D808	8-719-100-66	DIODE RD12E-B3	
		IC	
IC801	8-759-801-27	IC L78M05	
IC802	8-759-171-08	IC UPC7808H	
		IC LINK	
PS801⚠	1-532-605-11	LINK, IC (ICP-N10)	
PS802⚠	1-532-685-11	LINK, IC (ICP-N20)	
		TRANSISTOR	
Q801	8-729-177-32	TRANSISTOR 2SD773	
Q802	8-729-113-33	TRANSISTOR 2SB733-4	
		RESISTOR	
R801	⚠1-212-857-00	FUSIBLE 10 5% 1/4W	F
R803	1-247-849-00	CARBON 5.6K 5% 1/6W	
R804	1-247-855-00	CARBON 10K 5% 1/6W	
R805	⚠1-206-652-00	METAL OXIDE 330 5% 2W	F
R806	⚠1-206-652-00	METAL OXIDE 330 5% 2W	F
R807	1-246-405-25	CARBON 1.5 5% 1/4W	
R808	1-246-403-00	CARBON 1.2 5% 1/4W	
		VARIABLE RESISTOR	
RV801	1-228-990-00	RES, ADJ, CARBON 1K	
**********			
	*1-614-636-11	AC-9 BOARD **********	
	1-533-037-XX	HOLDER, FUSE	
	3-701-808-00	COVER, B	
		CAPACITOR	
C401	⚠1-130-710-00	FILM 0.1MF 20% 250V	
C402	⚠1-161-742-00	CERAMIC 2200PF 20% 400V	
C403	⚠1-161-742-00	CERAMIC 2200PF 20% 400V	
C404	⚠1-161-742-00	CERAMIC 2200PF 20% 400V	
C405	⚠1-161-742-00	CERAMIC 2200PF 20% 400V	
		CONNECTOR	
CN402⚠	*1-564-687-11	PIN, CONNECTOR 3P	
		FUSE	
F401	⚠1-532-279-11	FUSE, TIME-LAG T500mA 250V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

AC-9 TF-13

Ref.No	Part No.	Description	Remark
		TRANSFORMER	
T401	⚠1-421-357-31	TRANSFORMER, LINE FILTER	
**********			
	*1-614-637-11	TF-13 BOARD **********	
	*3-662-205-00	HOLDER (E), LED	
		DIODE	
D703	8-719-812-30	DIODE TL0123	
D704	8-719-812-32	DIODE TLY123	
D705	8-719-812-32	DIODE TLY123	
		RESISTOR	
R702	1-247-853-00	CARBON 8.2K 5% 1/6W	
		SWITCH	
S715	1-554-174-00	SWITCH, KEY BOARD	
S716	1-554-174-00	SWITCH, KEY BOARD	
S717	1-554-174-00	SWITCH, KEY BOARD	
**********			
		MISCELLANEOUS **********	
BS-1	⚠1-464-422-11	MODULATOR, RF BOOSTER(RFU-822)	
	⚠1-534-817-31	CORD, POWER	
	*1-555-110-00	CABLE, PIN	
	1-557-745-11	PLUG, CONNECTOR 24P	
PT-1	⚠1-447-942-11	TRANSFORMER, POWER	
**********			

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
A-6765-530-A	COMMANDER ASSY (RMT-402)	
1-556-893-00	CORD ASSY, COAXIAL	
2-352-651-02	INDIVIDUAL CARTON	
2-352-652-01	CUSHION (FRONT)	
2-352-653-01	CUSHION (LEFT)	
2-352-654-01	CUSHION (RIGHT)	
3-656-301-00	SCREWDRIVER, CONTROL	
3-760-184-12	MANUAL, INSTRUCTION (ENGLISH)	
3-760-184-42	MANUAL, INSTRUCTION (SPANISH, SWEDISH, ITALIAN)	
3-760-184-52	MANUAL, INSTRUCTION (FRENCH, GERMAN, DUTCH)	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7
ADJUSTMENT

[Equipment]

1) Color monitor TV.
2) Digital voltmeter.
3) Alignment Tool for Semi-fixed Variable Resistors and Coils. (See Fig. 7-1.)

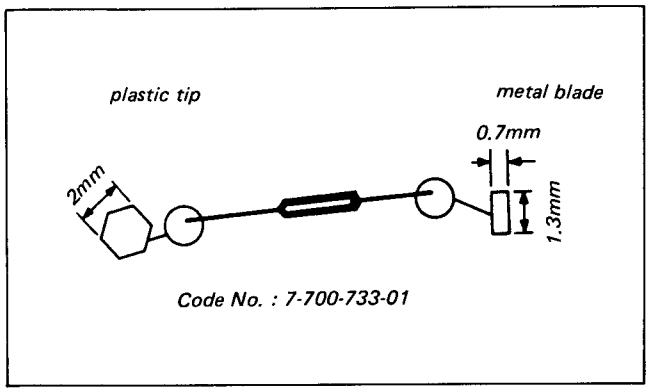


Fig. 7-1

7-1. Power Supply Check

1) Unswitched 5V Check (PS-62 board)
   Check that the voltage between 7 pin (unswitched 5V) and 8 pin (Ground) of CN802 is 5.6 ±0.3V.
2) 45V Check (TM-61 board)
   Check that the voltage between TP903 (45V) and TP906 (Ground) is 45 ±5V.
3) −32.5V Check (TM-61 board)
   Check that the voltage between TP902 (−32.5V) and TP906 (Ground) is −32.5 ±2V.
4) Switched 9V Check (PS-62 board)
   1. Connect the digital voltmeter between TP905 (switched 12V) and TP906 (Ground). (TM-61 board)
   2. Turn on "VTR POWER".
   3. Adjust the voltage to 12 ±0.1V with RV801.

7-2. TU AGC Adjustment

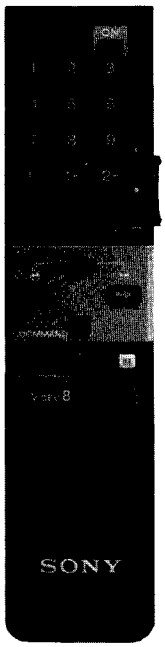
1) Receive broadcast TV signals in the highest contrast.
2) Turn RV101 clockwise until snow (intensity-modulated display) noise appears on the TV screen.
3) Slowly turn RV101 counterclockwise until the snow (intensity-modulated display) noise disappears.
4) Receive signals of all channels in turn, and ensure that there is no cross modulation beat, image deformation nor snow noise effect.

7-3. AFT Adjustment

1) Receive broadcast TV signals.
2) Turn off the AFT switch.
3) Press the tuning button and set for the optimum state while observing the monitor TV screen. (There should be not beat).
4) Turn on the AFT switch.
5) Adjust L106 to make sure that there is no beat or picture disturbance.

RMT-402

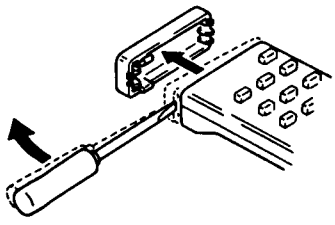
SERVICE MANUAL



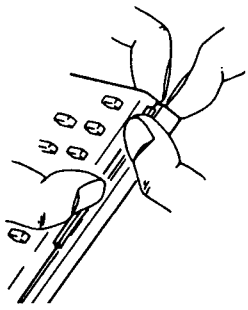
SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3 V dc, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 45 × 20 × 175 mm (w/h/d) (1 3/4 × 3/4 × 7 inches) incl. projecting parts and controls
Weight	Approx. 105 g (3.7 oz) incl. batteries

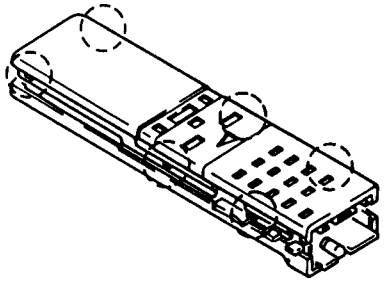
Disassembly



❶ Remove the front panel by prying up with a screwdriver.



❷ While pulling the lower case outward, life the upper case and free the claw.



❸ Free all 6 claws similarly.

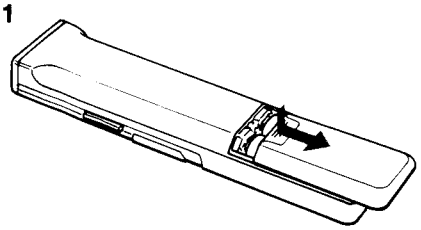
REMOTE COMMANDER

SONY®

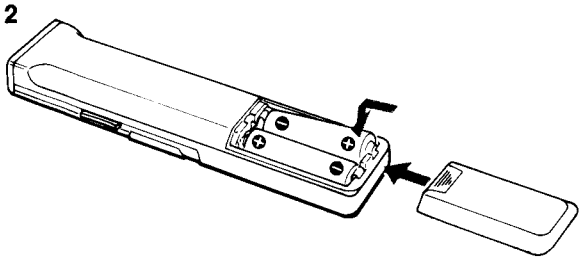
1. REMOTE COMMANDER SET-UP

[1]

1



2



Battery insertion [1]

1 Open the lid.

2 Insert two IEC designation R6 batteries with correct polarity and close the lid firmly.

Battery life

In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Notes

- There should be no obstacles between the Commander and the REMOTE SENSOR.
- Operable range is limited. [2]

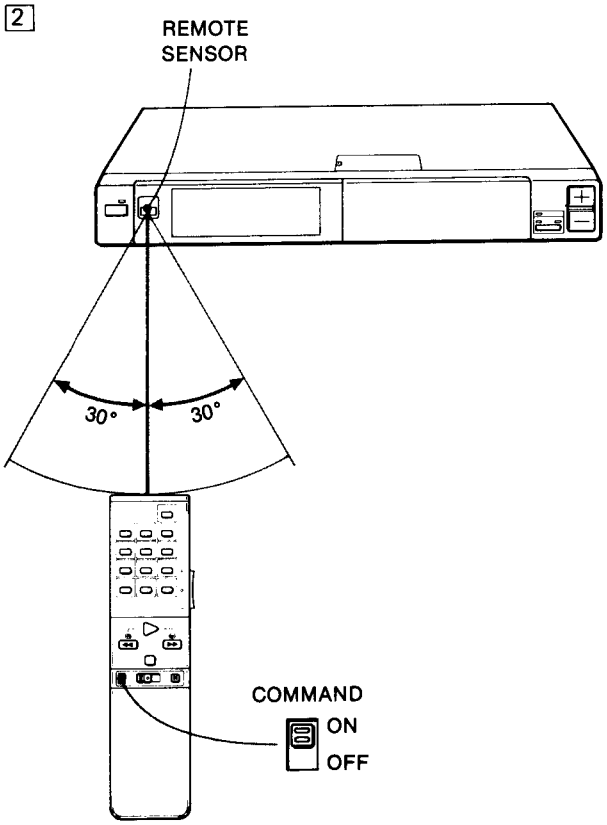
  Distance: Approx. 7 meters (23 feet) from the REMOTE SENSOR.

  Angle: Approx. ±30 degrees from the center.

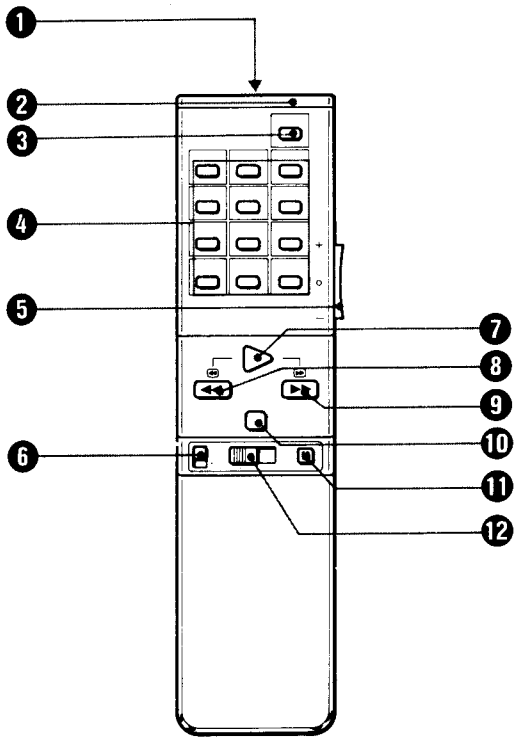
The shorter the distance between the Commander and the TT-V8EC, the wider the angle within which the TT-V8EC and/or the CCD-V8E can be controlled.

- Set the COMMAND switch to ON to operate the Commander. Set to OFF when the Commander is not in use.

[2]



2. LOCATION AND FUNCTION OF CONTROLS



❶ Transmitter
Point toward the REMOTE SENSOR.

❷ Indicator
Lights up when any of the buttons on the Commander is pressed.

❸ ON switch
Functions the same as the ON/STANDBY switch on the tuner timer unit.

❹ Programme number buttons
Press to select directly the TV programme to be viewed or recorded.
For 0 through 9, press corresponding single-digit numerals.
For 10 through 19, press "1–" for tens-digit and then ones-digit.
For 20 through 29, press "2–" and then ones-digit.

❺ PROGRAM button
Functions the same as the PROGRAM buttons on the tuner timer unit.

❻ COMMAND ON/OFF switch
Set to ON to turn the Commander on. Set to OFF when you have finished using the Commander.

Use the following buttons to operate the CCD-V8E video camera recorder.

❼ ▶ (play) button [P. 15]
Press to play back the tape.

❽ ◀◀ (rewind) button [P. 15]
Press to rewind the tape.
Pressing this button during playback enables you to view a high-speed playback in reverse.

❾ ▶▶ (fast forward) button [P. 15]
Press to advance the tape rapidly.
Pressing this button during playback enables you to view a high-speed playback.

❿ ■ (stop) button
Press to stop the tape running.

⓫ II (pause) button
Press to stop the tape momentarily during recording or playback.
Press again to release the pause mode.

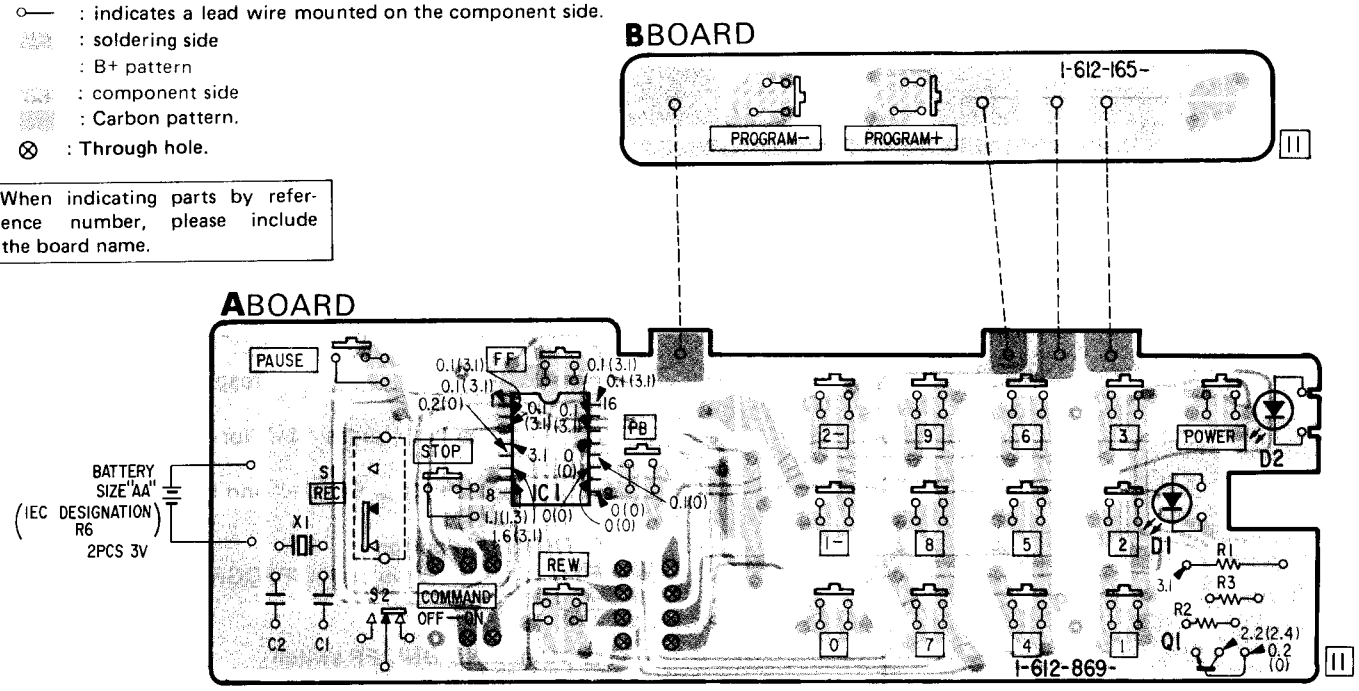
⓬ ● (record) switch [P. 14]
Slide to the right to start recording.

3. PRINTED WIRING BOARDS

Note:

- ○— : indicates a lead wire mounted on the component side.
- : soldering side
- : B+ pattern
- : component side
- : Carbon pattern.
- ⊗ : Through hole.

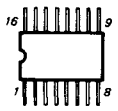
When indicating parts by reference number, please include the board name.



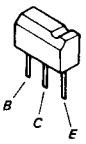
Note:

- All resistors are in ohms.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- [ ] : panel designation.
- —— : B+ bus.
- Voltages and waveform are for when [1] button is pressed.
- Voltages in ( ) are taken with button not pressed.
- The voltage value is measured using a digital tester (10MΩ).

CX23042-05



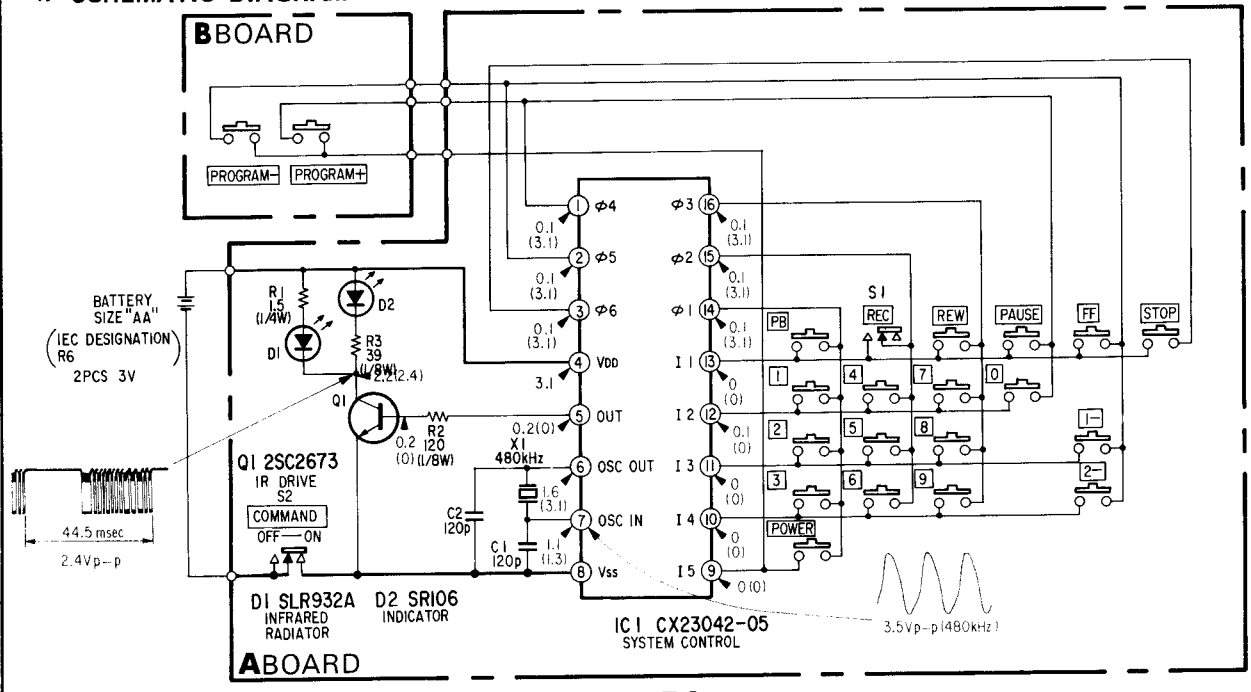
2SC2673



SLR932A

SR106C

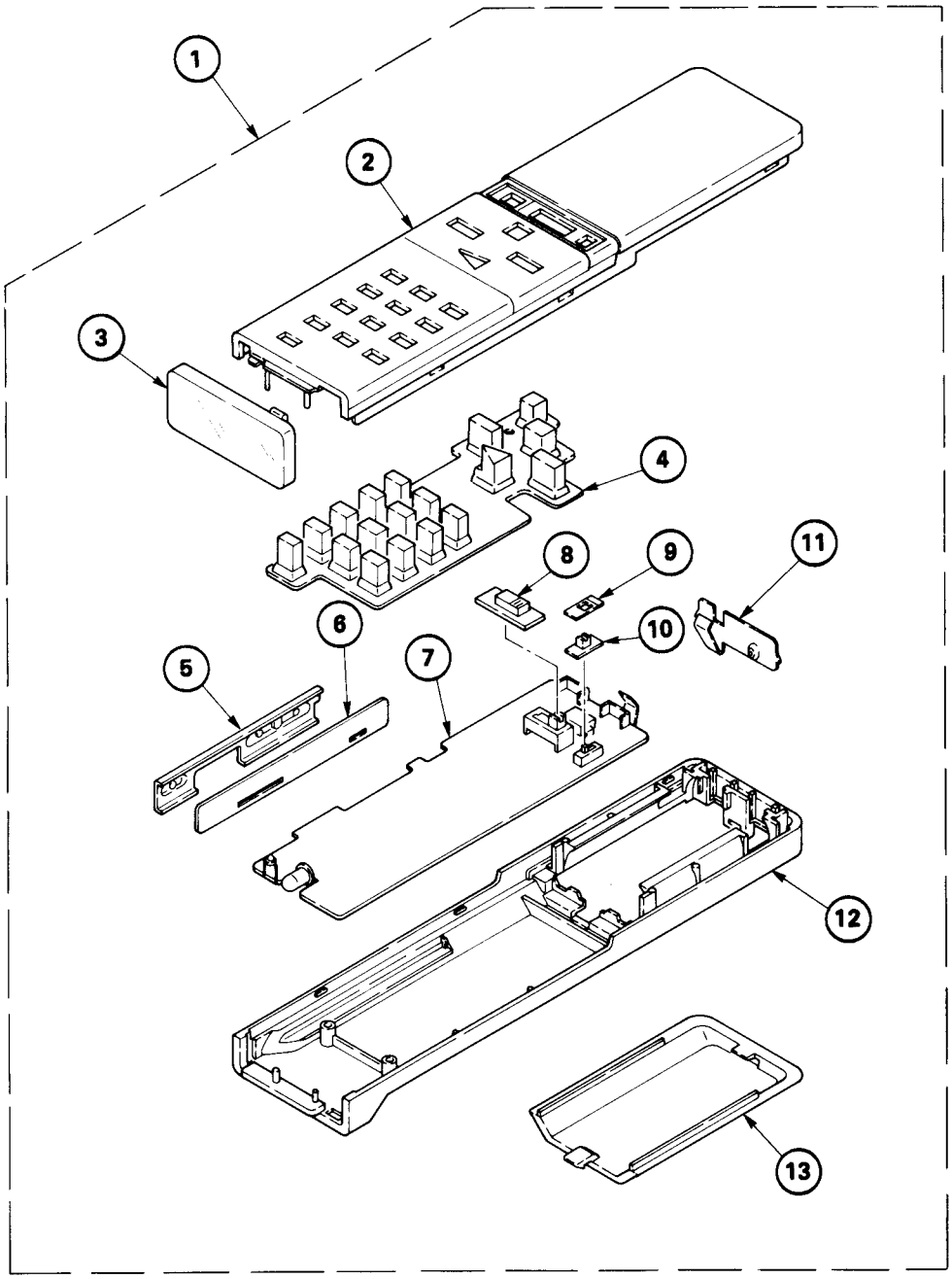
4. SCHEMATIC DIAGRAM



5. EXPLODED VIEW

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.



No.	Part No.	Description	Remark
1	A-6765-530-A	COMMANDER ASSY (RMT-402)	2-13
2	2-389-304-01	CASE (UPPER), COMMANDER	
3	2-387-107-01	PANEL, COMMANDER (FRONT)	
4	2-387-108-01	RUBBER (A), CONTACT	
5	2-389-303-01	RUBBER (B), CONTACT	
6	*1-612-165-11	B BOARD	
7	*1-612-869-11	A BOARD	
8	2-387-101-01	BUTTON, RECORDING	
9	2-387-113-11	PLATE, COLOR	
10	2-383-127-01	BUTTON, SLIDE	
11	4-350-925-00	TERMINAL (C), BATTERY	
12	2-387-110-11	CASE (LOWER), COMMANDER	
13	2-387-105-11	COVER, BATTERY	

A B

6. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

Ref.No	Part No.	Description				Remark
	*1-612-869-11	A BOARD				
		********				
	2-387-103-01	TERMINAL (A), BATTERY				
	2-387-104-01	TERMINAL (B), BATTERY				
		CAPACITOR				
C1	1-102-107-00	CERAMIC	120PF	10%	50V	
C2	1-102-107-00	CERAMIC	120PF	10%	50V	
		DIODE				
D1	8-719-912-39	DIODE SLR-932A				
D2	8-719-100-06	DIODE SR106C				
		IC				
IC1	8-759-912-95	IC CX23042-05				
		TRANSISTOR				
Q001	8-729-967-32	TRANSISTOR 2SC2673				
		RESISTOR				
R1	1-246-405-25	CARBON	1.5	5%	1/4W	
R2	1-246-772-00	CARBON	120	5%	1/8W	
R3	1-246-766-00	CARBON	39	5%	1/8W	
		SWITCH				
S1	1-554-364-00	SWITCH, SLIDE				
S2	1-553-977-00	SWITCH, SLIDE				
		CRYSTAL				
X1	1-527-476-00	OSCILLATOR, CERAMIC				
**********						
	*1-612-165-11	B BOARD				
		********				

9-972-370-01

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